American Druggist

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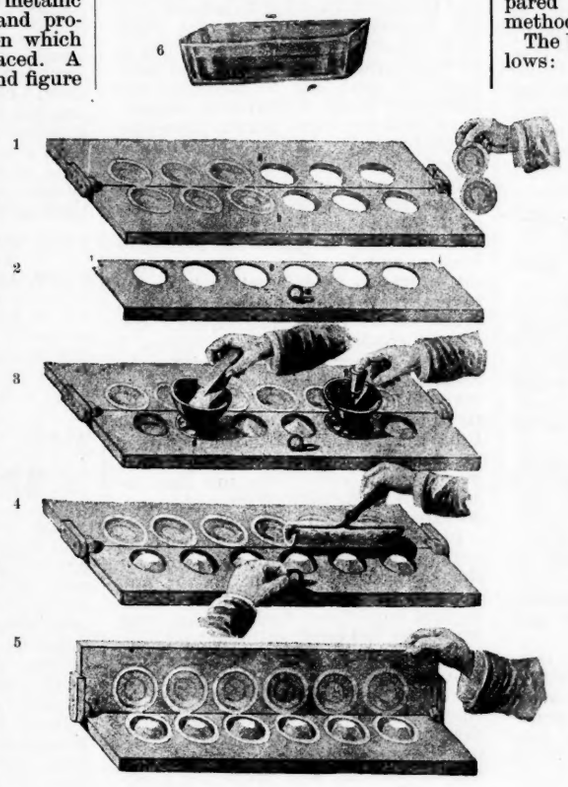
WAFER-CAPSULE APPARATUS.

ADOLF VOMACKA, editor of the *Pharmaceutische Rundschau*, of Leitmeritz, Germany, has lately improved the apparatus and methods of Limousin in several particulars. The essential features consist in having the wafers attached in pairs, and the use of a peculiar apparatus for folding them upon each other at the point of union. The shape of the apparatus and the details of manipulation are readily understood with the aid of the adjoining illustrations. Two metallic plates are hinged together and provided with perforations upon which the open capsules are to be placed. A guard-plate shown in the second figure is then placed carefully over the nearest plate, and serves to protect the margins of the capsules beneath, from contamination by the powder inserted. A funnel, similar to that used in some of the modifications of Limousin's apparatus, is then inserted into an opening in the guard-plate and through it a powder is poured into the capsule beneath. The guard-plate is to be held steady with one hand, while a finger of the other hand, armed with a rammer, forces the powder evenly into the capsule. The funnel is then to be removed to another hole in the guard-plate, and the operation of charging repeated. When all the capsules on the side nearest the operator are filled, the guard-plate being still held firmly, the wafers on the opposite plate are to be wet by means of a roller covered with felt or cloth, to enable it to hold water. The farther plate is then to be tipped up as shown in the lower figure, the edge of the guard-plate serving to make a sharp bend at the junction of the wafers of each pair. Then the guard-plate is to be removed carefully, and the farther plate turned completely down, so as to bring the moistened edges of the wafers on one side in contact with the edges of those holding the powder, and the operation is completed by opening the plates, and removing the capsules with their contents.



Vomacka's Wafer-Capsule Apparatus.

1, The open plates being charged with wafers; 2, Guard-plate; 3, Process of filling the wafers; 4, moistening the covers; 5, Folding the wafers together; 6, Trough for moistening the roller.

Two sizes of apparatus are furnished; one having holes 1½ inches in diameter, the other with holes ¾ of an inch across. The wafers to accompany them may be had of Mr. Vomacka, with any wording desired *baked* (not stamped) into them.

Until the apparatus appears in this market, orders or inquiries should be addressed to the inventor, who, after January 1st, will be in Prag. Until then he will continue in Leitmeritz.

Paraldehyde Suppositories.

PARALDEHYDE suppositories have been employed as a hypnotic in several insane asylums, according to Dr. A. Santer (*Der Fortschritt*, August 5th, 1885), with the most satisfactory results. Each suppository should contain 1 gramme (15 grains) of paraldehyde. They may be made by allowing the paraldehyde to solidify in a glass bottle, in a water-bath, with twenty per cent of paraffin, and this gelatinous mixture introduced into the suppositories.—*Therap. Gazette.*

[ORIGINAL COMMUNICATION.]

SALICYLATE OF IRON.

BY H. T. EBERLE.

IN order to supply a demand recently for the above salt, I looked for a working formula, in the periodicals, but found none.

Double decomposition will not produce it, as the salt is soluble; I therefore devised the following process, which worked satisfactorily.

Take of sulphate of iron, 100 parts.
Carbonate of sodium....110 "

Dissolve the sulphate of iron and carbonate of sodium separately, each in two hundred parts of boiling water, and filter both solutions. Mix them, when cold, and allow the precipitate of carbonate of iron to subside. Pour off the supernatant liquid, and wash the precipitate with water until the washings are no longer rendered turbid with solution of chloride of barium.

Then pour the precipitate into an evaporating dish, and gently warm over a water-bath, adding salicylic acid until effervescence ceases and the precipitate is entirely dissolved.

Lastly, evaporate the solution on the water-bath to dryness and powder the residue.

WATERTOWN, WIS.

Lowest known Temperature.—K. Olszewski announces (in *Compt. Rend.*) that he has succeeded, by a modification of the apparatus previously employed by him for obtaining very low temperatures, in reaching the lowest degree so far attained, namely, 225° C. This was accomplished by the evaporation of *solid* nitrogen under a pressure of only 4 millimeters of mercury, that is, practically *in vacuo*.

[ORIGINAL COMMUNICATION.]

THE U. S. P. PROCESS FOR ASSAYING OPIUM.

BY HERBERT LLOYD, OF NEW YORK.

IN handling large quantities of opium for making its officinal preparations, the writer has been called upon to make a great many assays to ascertain the percentage of morphine in the drug. After repeated trials, it became evident that the U. S. P. process gave results considerably too low, as compared with some other published methods.

The U. S. P. process is briefly as follows:

Opium.....seven grammes, 7
Lime, freshly slaked, three grammes, 3
Chloride of Ammonium, three grammes, 3
Alcohol,
Stronger Ether,
Distilled Water.....āā q.s.

The opium and lime are triturated with 70 C.c. distilled water and agitated for half an hour; 50 C.c. of the liquid are filtered off, and 5 C.c. alcohol and 25 C.c. stronger ether are shaken with it. The chloride of ammonium is then added, and the whole shaken for half an hour and allowed to stand twelve hours. The morphine crystals are then separated, dried, and weighed. The result (five-sevenths of the whole), in grammes, multiplied by twenty, equals the percentage of morphine in the opium taken.

In order to prove that results thus obtained are incorrect, the following experiments were made.

Definite quantities of *pure* alkaloid morphine (instead of opium) were put through the above process, and when the results were weighed there was always an average shortage of about 0.08 Gm. on the morphine recovered from 50 C.c. It was evident that the loss was occasioned either by the decomposition of the morphine, or by the solvent action of some of the reagents upon it. The chloride of ammonium, for instance, of which 3.0 grammes are used, when 0.1 Gm. would be ample theoretically, might have the latter effect. To test this, experiments were made with pure morphine, as before, but 0.1 Gm. of chloride of ammonium was used in each case. This amount was found insufficient to entirely release the alkaloid, indicating that the 50 C.c. of liquor from which the morphine was precipitated contained more lime than the same quantity of lime-water (on which the 0.1 Gm. chloride of ammonium was based) would contain. This was proved to be the case, as will be seen hereafter. Further experiments were made, using 0.2 Gm. chloride of ammonium, but in the results the loss was almost as great as when 3.0 Gm. of the reagent were used. Next, to ascertain if the loss was *invariable* (as was first supposed), regardless of the amount of morphine used, the following four assays were made.

1.0 Gm. morphine was put through the U. S. P. process and lost 0.089 Gm. on ½ (50 C.c.); 0.75 Gm. lost 0.085 Gm. on ½ (50 C.c.); 0.5 Gm. lost 0.070 Gm. on ½ (50 C.c.); 0.25 Gm. lost 0.060 Gm. on ½ (50 C.c.).

These experiments were repeated, and gave practically similar results, showing that the loss was in direct proportion to the quantity of morphine present.

As previous experiments showed clearly that the presence of morphine increased the solubility of the lime, and as an increase of lime, of course, means an increase of free ammonia, it was assumed that the variation in loss might be largely due to the solvent action of that alkali. The loss, too, was found to be slightly increased by the 5 C.c. of alcohol, which is added before precipitating.

The solubility of morphine in water of ammonia must be determined by further experiment, but the writer found that 50 C.c. of distilled water, 0.25 C.c. concentrated water of ammonia (corresponding to the amount of ammonia set free by the lime) and 5 C.c. alcohol readily dissolved 0.08 Gm. of the alkaloid, but the same liquor without the ammonia dissolved but 0.02 Gm.

In the reaction which takes place when the morphine is precipitated,

$$\underset{74}{Ca(HO)_2} + 2\,\underset{106.4}{NH_4Cl} = \underset{108.8}{CaCl_2} + \underset{34}{2NH_3} + \underset{36}{2H_2O}$$

74 parts of lime will set free 34 parts of ammonia.

Now the amount of lime in 50 C.c. lime-water would be about 0.066 Gm., but when morphine is added, it will take up more lime (as was stated before), and in this abnormal lime-water more morphine is dissolved than in ordinary lime-water. These two facts are proved by what follows.

Seventy C.c. lime-water and 1.0 Gm. morphine were shaken for several hours, but the morphine failed to dissolve, 0.07 Gm. being recovered on filtering out the residue and drying it. That 1.0 Gm. of morphine is soluble in 70 C.c. lime-water with an excess of lime will be seen from the next experiment, which proves that lime and morphine are mutual solvents.

1.0 Gm. pure morphine and 1.0 Gm. pure lime were shaken with 70 C.c. fresh lime-water, the residue washed with the same lime-water, dried rapidly, and weighed. The recovered lime weighed 0.911 Gm., 0.089 Gm. being dissolved. 1.0 Gm. lime treated in the same way with 0.5 Gm. morphine lost but 0.027 Gm. From this it will be seen that the 50 C.c. of assaying liquor will contain 0.066 Gm. lime naturally, and (if 1.0 Gm. morphine was to be assayed) in addition 0.062 Gm. lime (⅞ of 0.089 Gm.) which the morphine dissolved, and would set free 0.058 Gm. ammonia. Thus:

$$74 : 128 :: 34 : 58$$

Further assays were made on different quantities of morphine—of course always less than 1.0 Gm.—using 70 C.c. lime water alone (in place of 3.0 Gm. lime and 70 C.c. distilled water), and the loss was *uniformly* about 0.060 Gm. morphine, which was to be expected.

Hence it follows that the more morphine present in the opium to be assayed the greater will be the amount of lime dissolved and of ammonia set free, and, as a result, the greater loss of morphine.

The above facts, it is hoped, demonstrate clearly that in all assays made by the U. S. P. method 0.06 Gm. to 0.09 Gm. should be added to the result, according to the amount of morphia recovered.

It would doubtless be preferable to avoid the loss rather than allow for it, but after a number of attempts it was found to be impossible if lime was used, and as this process is so excellent in other respects (giving clean morphine, and being very simple), it would be unwise to reject it, providing the loss which the writer has tried to account for is always allowed, and in fairness it always should be. The writer has been informed by a chemist engaged in the manufacture of morphine that he always in working the opium obtained more morphine than an assay by the U. S. P. process had led him to expect.

NEW YORK, Nov. 12th, 1885

The Metric System and our Apothecaries' Weights and Measures.

THE writer has for several years been an earnest advocate of the adoption of the Metric System in this country for medical and pharmacal purposes. Upon closer study, however, of the special requirements of medicine and pharmacy as to weights and measures I am led to believe that the decimal system does not fulfil these requirements. The question as to what system of weights and measures we shall use in medicine and pharmacy is one of such great importance that the facts herein presented ought to receive earnest consideration.

Believing that my past activity in attempting to further the introduction of the Metric System in the practice of medicine and pharmacy in the United States is somewhat generally known, and in view of the fact that my efforts in this direction have for several years been the subject of warm praise from some and equally unstinted condemnation from others, I deem it proper to publish briefly the reasons which have impelled me to reverse my opinions. I have not arrived hastily at these conclusions, and I have to frankly acknowledge that my former position on this question was possible only from my then insufficient knowledge of some of its important but not so obvious bearings.

In order to construct a practical system of weights and measures for the purpose of the physician and pharmacist it would seem to be of the highest importance to determine what would be the most suitable and convenient smallest unit of fluid measure. The fact cannot be ignored that fluid measures are necessary in the administration of liquid remedies, and that, therefore, consistency demands the use of fluid measures also in prescribing, dispensing, and preparing medicines. The *drop*, no matter how variable in size it may be shown or admitted to be, still remains a convenient and familiar object by which to not only fix in the mind an approximate quantity but to actually measure doses. Any quantity less than a drop would clearly be an impracticable unit; whilst the *minim* has by long experience been found a most useful unit, *solely because of its nearness to the average drop of most liquids.* The Metric System has no unit of fluid measure less than the Cubic centimeter, which is equal to 16.231 minims and therefore much too large. Fractional parts should be avoided as much as possible, and hence a minim is none too small.

The next step is to fix upon a weight unit which shall be commensurable with our smallest unit of fluid measure. The nearer approach then to a drop of water would be about one grain. The Metric System has nothing to offer but the decigramme, equal to about one and one-half grain.

For fixing the strength of medicinal preparations, especially liquids, and for the easy subdivisions of doses, it is most convenient to have units of weight and measure which shall be not only parallel and commensurable, but also capable of several progressive subdivisions by two into smaller units without fractions until the number *one* is reached. The Metric System has several parallel and very nearly commensurable units of weights and measures—the liter and kilogramme, the deciliter and hektogramme, the cubic centimeter and gramme, etc.—but, being a decimal system, its units are divisible by two into the next lower units only once without striking fractions. Our American apothecaries' weights and measures are in this respect preferable to the Metric System, and if so modified as to render the several units (already parallel) commensurable, our ounces, drachms and grains, and fluid-ounces, fluidrachms and minims, would give us a very satisfactory system. This might be done by making our troy ounce exactly equal to the weight of one fluidounce of water at at the most common room temperature—that temperature at which we ordinarily do our work in our laboratories and drug stores—our drachm exactly equal to a weight of a fluidrachm, and the grain equal to the weight of a minim of water at the same temperature. If, in addition, we should change the subdivision of the drachm and fluidrachm so that one drachm shall be sixty-four instead of sixty grains, and a fluidrachm sixty-four instead of sixty minims, this system would be perfect. We would then have:

1 U. S. Apothecaries' Ounce =
1 U. S. Apothecaries' Fluidounce.
1 U. S. Apothecaries' Drachm =
1 U. S. Apothecaries' Fluidrachm.
1 U. S. Apothecaries' Grain =
1 U. S. Apothecaries' Minim.

Also

64 Grains = 1 Drachm.
8 Drachms = 1 Ounce.

And

64 Minims = 1 Fluidrachm.
8 Fluidrachms = 1 Fluidounce.

The ounces would be divisible into halves, quarters and eighths, expressed in drachms without fractions, and into sixteenths, thirty-seconds, sixty-fourths, etc., expressed in grains or minims without fractions; and the drachms would be divisible into halves, quarters, eighths, sixteenths, thirty-seconds and sixty-fourths, expressed in whole grains or minims.

In the Metric System we find it inconvenient to write for any of the subornate units. The gramme and the cubic centimeter are universally used. Hence fractions are unavoidable. Of late it has been shown that the use of the decimal point is fraught with danger to human life, which certainly ought not in any way or degree be dependent upon a frequently misplaced, misinterpreted, omitted, duplicated or illegible dot.

Whilst we have assumed that the gramme and cubic centimeter are commensurable, it is to be remembered that a cubic centimeter of water weighs one gramme only when at the unusual temperature of +4° C. and *in vacuo*, and that unfortunately the kilogramme of the Archives is too light by about nine grains, so that in reality a liter of water at 22° C., which I assume to be the mean temperature of our work-rooms, is not 1,000 Gms. but only about 997.4 Gms.

The value of our fluidounce should be first fixed. It might be made exactly equal to 32 cubic centimeters, in order to provide at once a convenient and simple connection between the Metric System and our apothecaries' weights and measures without materially altering the present value of the fluidounce.

If we assume that the wine gallon is 231 cubic inches, then our present U. S. fluidounce is equal to 29.573 cubic centimeters. To increase it to 32 cubic centimeters would be to make it about $\frac{1}{18}$ larger than it now is. Inasmuch as the fluidounce is a unit referred to almost exclusively for stating the quantities of diluents and menstrua, this change would surely not be a

serious one. If we should then make our apothecaries' ounce the exact equivalent of the weight of one such fluidounce of pure water at 22° C., weighed in air, this would be equal to 31.91 Gms., instead of 31.1035 Gms., which it now is. This would amount to a difference of about 2½ grains for every 100 grains or about 2½ per cent; or in other words, the present troy ounce would be $\frac{1}{40}$ smaller than the new ounce.

Next, we could divide the new fluidounce and the new ounce into into eight fluidrachms and eight drachms, respectively, the difference between the old and new drachms and fluidrachms being, of course, proportionately the same as between the old and new ounces.

Finally, the new fluidrachm might be divided into 64 new minims, and the new drachm into 64 new grains. The new minim would then be exactly $\frac{1}{16}$ cubic centimeter, or about $\frac{1}{10}$ larger than our present minim; and the new grain would be only 2.46 milligrammes (or about) $\frac{1}{17}$ smaller than our troy grain.

A new fluidounce equal to 32 cubic centimeters, and a new ounce of 32 Gms. would not be as desirable as a fluidounce weighing exactly one ounce when referring to water at 22° C. (71.6° F.), as 32 cubic centimeters of water does not weigh 32 Gms. either at +4° C., or at +22° C.

In my little manual of Weights, Measures, and Specific Gravity, just published, these data will be found more fully commented upon. On pages 45 and 46 of the manual referred to, the exact difference between the several corresponding old and new units are stated, and on page 36 it is suggested that if these reciprocal relations between our unit of weight and measure should be established, our old grain weights and fluid measure graduates could still continue to be used until gradually replaced by new ones without the slightest confusion or disadvantage. The difference between the new ounce and the troy ounce would be less than 13 grains; between the new drachm and the old drachm about 1½ grains; between the old grain and the new grain the difference would be as if 26 grains had been taken instead of 27. As to the fluid measures, the differences between the old and new fluidounce would be less than 40 minims; between the old and new fluidrachm less than 5 minims; and between the old and new minim the difference would be as if 40 minims should be taken instead of 41. Yet, with these trifling modifications in the accepted values of our units of weight and fluid measure we could at once insure: 1. Parallel units; 2. Commensurability; 3. Divisibility of the larger units into halves, quarters, eighths, sixteenths, etc., expressed in whole numbers of the lower units, and thus the avoidance of fractions to the greatest possible extent.

Even if our present apothecaries' weights and measures should remain unchanged, they are to be preferred to the Metric System, because they are so nearly what they ought to be that it would seem to be a grave error to discard them in favor of a system which has been found to be so hazardous by reason of its unavoidable decimal fractions and decimal point.

In the absence, however, of any fixed legal standards for the United States, why should we continue to use the troy ounce with the peculiar (apothecaries') subdivisions adopted by the London and Edinburgh Colleges, and their special apothecaries' fluid measures (all of which we inherited from England in colonial times, and which have since been abolished in Great Britain) without either legalizing them, fixing the values of their units, or modifying them so as to serve their special uses as perfectly as possible, especially as those weights and measures are used by no one but physicians and pharmacists?

A new, complete, and harmonious system of weights and measures for this country, such as would merit permanent adoption, would, of course, be preferable; but in view of the prevailing diversity and confusion, it may be considered sufficient to remodel the special weights and measures used in medicine and pharmacy independently of those used in general commerce.

The plan here suggested is not the only one which seems practicable; but if we would have the weights and measures of pharmacy bear simple relations to the weights and measures of modern science, the methods open to us are to either make our fluidounce exactly 32 cubic centimeters and to make the troy ounce equal to the weight of the fluidounce of water at whatever may be deemed the most suitable standard temperature, or to make an apothecaries' ounce of such

Muencke's gas burner.

size that 32 of them shall correspond to the weight of a liter of water at 22° C. One liter of pure water at 22° C. weighs 32.067 of our present apothecaries' ounces, and the size of the ounce might be slightly increased so that only 32 ounces (instead of 32.067) shall represent the liter. Then the fluidounce could be made to represent the volume of one ounce of water at 22° C. The first-named plan is preferable.

Either of these plans would connect our weights and measures with the Metric System and its primary basis. If were to attempt the construction of an entirely new system from beginning to end, based upon either the seconds pendulum or the quadrant of the earth, ignoring all weights and measures at this time in use, the task would probably be accomplished in vain, if at all. —Prof. Oscar Oldberg in *The Pharmacist.*

IMPROVED BUNSEN'S BURNER.

Dr. Robert Muencke has introduced an improved Bunsen's burner. The principal innovation consists in this, that the new burners have much larger openings for the admission of air, and that the latter is regulated by the higher or lower position of the burner-tube. In this way either a bright luminous flame may be produced by completely shutting off the supply of air, or a colorless heating flame may be produced gradually or suddenly. The raising or lowering of the burner-tube is effected in one of three ways: either by a screw on the lower end of the tube working in the base, or by means of a loose nut, or by pushing the burner-tube into the base or drawing it out, as desired, the friction of a close-fitting joint serving to retain the tube in place and the screw-thread being omitted. We illustrate only the second-named variety.—*Zeitsch. f. anal. Chem.*, 1885, 420.

Decolorized Solution of Iodine.

Mr. H. N. Draper, after reference to the inutility of the combination of iodine with carbolic acid, sodium acetate or hyposulphite, and the iodate and iodide of ammonium, speaks of the observation of Hlasiwetz that resorcin, in common with orcin and phloroglucin forms loose combinations with iodine, and says that he was thereby led to attempt a solution of iodine which should possess its therapeutic value without coloration. He says:

When an iodine solution is added to an excess of a solution of resorcin, the former is at once decolorized. Nor does this solution give the starch reaction of iodine. The preparation of a decolorized solution of iodine, by means of resorcin, may be effected in several ways. The iodine may be, for example, dissolved in anhydrous ether and gradually added to the warm solution, or chloroform or carbon bisulphide may be used in the cold, and the resorcin solution will gradually, upon agitation, withdraw the iodine from these solvents. The quantity of iodine which can be in this way decolorized depends, not only upon the proportionate quantity of resorcin employed, but upon the quantity of water involved.

The solution becomes paler in tint after some days, especially in full sunlight, but never quite colorless. When combination has been effected, neither heating in a sealed tube nor exposure to a cold of −4° C. causes any alteration in the tint of the solution. The solution, when evaporated, either in vacuum or over sulphuric acid under a bell-glass, becomes darker in color, and finally deposits the resorcin in well-defined crystals, with which the iodine is entangled, but from which it at length evaporates. But if, before this takes place, the quantity of water originally present be added, the resulting solution assumes its original tint. The addition of strong sulphuric acid at once withdraws the whole of the iodine from its combination.

It is remarkable that a solution containing a small proportion of resorcin may be scarcely perceptibly darker in color than one which contains a much larger quantity of the organic body, and although in the first case, perhaps, the whole quantity of free iodine in the solution does not exceed 0.01 grain, yet this is not absorbed by the additional resorcin. But we are dealing here with a very exceptional set of conditions, and have a remarkable example of what Hlasiwetz strikingly describes as the middle ground between solution and chemical combination. There is, indeed, constantly apparent a struggle, so to speak, between the involved molecules; and this is influenced, not only by the relative quantity of the organic body present, but largely by that of the water. If, for example, a solution of iodine and resorcin be taken which colors starch distinctly, and gives up iodine to chloroform, and to this solution be added its own volume of water, the starch coloration is much less marked, and that of chloroform but faintly perceptible. If now another volume of water be added, the starch paste is not colored at all, and chloroform remains colorless. And I should here direct attention to the fact that in this case the coloration of added chloroform affords an infinitely more delicate indication of the presence of free iodine than does starch, and chloroform has the additional advantage that it can be added to the whole quantity of a solution under examination without spoiling it. To this it may be added that the eye alone is a quite sufficient indicator. If the solution is colorless, it may be safely assumed that no free iodine is present.

Hlasiwetz states that the quantity of hydriodic acid produced is insignifi-

cant. I have not found this to be true when operating under ordinary conditions, but it is just possible that at a low temperature it may be the case. I am at present engaged upon this important point.

I have been working, as will have been seen, from the point of view of the pharmacist. An iodine solution which shall not stain the skin has been a desideratum. Here it is, and it is what it claims to be; that is, that the greater part of its iodine is in so unstable combination that upon spontaneous evaporation it is left as free iodine; while, on the other hand, until the solvent has evaporated, the iodine remains upon the skin tissue easily assimilable.

Here, I think, the province of the pharmacist ends. It remains for the physician to say if the combined organic body exercises any prejudicial effect, or if, in a word, the decolorized solution will fulfil, without its inconveniences, the objects of the official tincture. But I do not hesitate to predict that it will, and I have, pending a verdict, thought it desirable to obtain for the solution protection under the Patent Act.

According to Andeer (NEW REMEDIES, September, 1880), resorcin is possessed of remarkably antiseptic properties, even in a one-per-cent solution. It is not absorbed by the healthy, unwounded skin, nor does it, when rubbed into it, produce any symptoms of irritation. It has even been used without any bad result as a hypodermic injection.—*Brit. and Colonial Druggist.*

EMULSION MIXER.

THOSE who have occasion, at this season of the year, to make emulsions of cod-liver oil will appreciate some mechanical contrivance which will replace the tedious mortar and pestle. To this class of apparatus belongs the "Cyclone" emulsion mixer made by the Hunter Sifter Manufacturing Co., of Cincinnati, illustrated in the adjoining figure. The mode of construction is sufficiently evident upon reference to the figure. The capacity of the bowl is about ten quarts, and the cost of the apparatus varies from five to seven dollars, depending upon the provision of a porcelain lining or not.

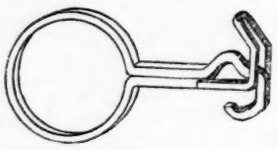
Phosphate of Bismuth.

FREDENAT recommends phosphate of bismuth in place of the subnitrate, for the reason that the former salt is of more uniform and constant composition than the latter, and that it can also be more readily examined for impurities. It being almost insoluble in dilute acids, even on boiling, such adulterations as carbonate of calcium or magnesium, or phosphate of calcium, could be quickly detected by treating the salt with dilute acetic acid.

Phosphate of bismuth may be prepared by gradually adding to a boiling solution of acid nitrate of bismuth, a solution of (ortho) phosphate of potassium [or sodium], until a precipitate is no longer produced, and afterwards washing the precipitate until it no longer has an acid reaction. When dried, the salt appears in form of a granular, white, and heavy powder.—*Pharm. Zeit.*, No. 79.

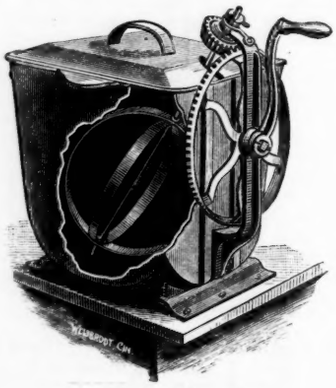
[The latter reason—that it is more easily examined for purity—is not of sufficient weight to recommend the substitution. The first-named reason is much more important, but it remains to be seen whether the therapeutic effects will be the same. Theoretically, they are probably identical.

Much of the bismuth of the market now dispensed is of the kind which imparts a very disgusting odor to the breath after three to six doses have been taken, while some can be taken for several days with comparatively little annoyance from this source. We know of physicians who have had so much complaint on the part of patients that they have resorted to the practice of dispensing, themselves, the subnitrate of bismuth which their patients require, after providing themselves with a supply from some source which has been found to be comparatively free from bad effects.—ED. AMER. DRUGGIST.]



AN IMPROVED PINCH-COCK.

N. v. KLOBUKOW recommends the form of pinch-cock shown in the annexed cut. It has the advantage of permitting the rapid disengagement of the tube which it holds without pulling the latter through it.—*Zeit. anal. Chem.*, 24, 399.



"Cyclone" Emulsion Mixer.

Iodol, a New Antiseptic.

ONE of the constituents of animal oil (the distillate obtained by subjecting animal substances containing protein bodies to destructive distillation) is pyrrhol. When this is freed from other bodies as much as possible, and then precipitated by iodide of potassium, an iodine substitution product is obtained, namely tetra-iodo-pyrrhol, which has been called for short *iodol*, by the discoverers, Drs. Silber and Ciamician, of Rome. It is now made on a large scale by Kalle & Co., of Biebrich on the Rhine. According to experiments made by Dr. Mazzoni, of Rome, iodol is a powerful *antiseptic*, having an anæsthetic action and greatly promoting the granulation of wounds. It has this advantage over iodoform, that it is free from the penetrating odor of the latter and does not produce any symptoms of intoxication.

Iodol is a brownish, crystalline powder which may be warmed to 100° C. without decomposition. At a higher temperature it evolves vapors of iodine and finally leaves a voluminous charcoal. It is almost insoluble in water, but easily soluble in ether, chloroform and alcohol, and especially so in absolute alcohol. Its alcoholic solution is precipitated by water, but not by glycerin. Sulphuric acid dissolves it with a green color, and when the alcoholic solution is warmed with nitric acid, it becomes bright red.

Iodol contains nearly 90 per cent of iodine. Iodoform contains nearly 97 per cent.—After *Pharm. Post.*

To Prevent Rust.—A coating of caoutchouc oil is said to have been adopted by the German army.—*Chemist and Druggist.*

Lait Virginal.

Tincture of Benzoin	2 drachms.
Rose-Water	8 ounces.
Mucilage	1 drachm.

Add the mucilage to one ounce of the rose-water, then mix in the tincture, and lastly the rest of the water.—*Chemist and Druggist.*

Hair Wash (Erasmus Wilson).

Eau de Cologne	2 oz.
Tincture of Cantharides	2 dr.
Oil of Rosemary, " " Lavender	each 10 drops.

—*Chemist and Druggist.*

Roup Pills.

Hydrarg. Subchlor.	gr. i.
Pulv. Antimonialis	gr. i.
" Zingiberis	gr. i.
Ext. Glyzyrrhizæ, q. s.	ut fiat pilula.

A pill night and morning.—*Chemist and Druggist.*

To Remove Moles or Birth-marks.

Tartar Emetic, in impalpable Powder	1 part.
Soap Plaster	4 parts.

Beat them to a paste which apply (not more than a line in thickness) and cover the whole with strips of gummed paper. It is said that in four or five days suppuration will set in, and that only a slight scar will finally be left in place of the birth-mark.—*Chemist and Druggist.*

Heger's Fluid.

℞ Carbolic Acid (cryst.)	ʒ i.
Alcohol (strong)	ʒ iij.
Strong Water of Ammonia	ʒ i.
Distilled Water	ʒ ij.

M.

The above was recommended by the late Dr. R. C. Brandeis to be inhaled in the proportion of a few drops, every hour, for the relief of catarrhal headache, and causes a profuse secretion of mucus followed by relief from the pain.

Parthenine in Malarial Fevers.

DR. TOVAR, of Cuba, has successfully treated eighty cases, such as ordinarily receive quinine, with parthenine, the substance in scales derived from *Parthenium hysterophorus*, a domestic remedy in Cuba for malarial fever. Parthenine is extracted in the form of dark-colored scales, which color water yellow, and impart to it an aromatic flavor.—*Chron. med.-quir. de la Habana.*

Mesquite Gum as Substitute for Gum Arabic.

IN a thesis by H. J. Schuschard, of which an abstract is given in the *Amer. Journ. of Pharm.*, the writer says: "Gum mesquite does not appear to be much used at present, as the price of gum arabic is low. It is applicable to all purposes like gum Arabic, though the dark-colored varieties may be objectionable in some cases. In medicine, it does not only answer as well as gum Arabic, but it may be used with advantage, occasionally, since its solution can be combined with basic lead acetate and with ferric salts without being precipitated. No doubt, in time, gum mesquite will become a commercial article of some importance. It is generally assorted, according to its color, into four varieties or grades."

Powdering Aloes is not a pleasant occupation. The bitter dust is likely to trouble the operator, and the powder is apt to cake. The addition of about one drop of oil to every ten grammes of aloes will be found to remedy both these annoyances.—*Pharm. Post.*

NOTES ON PRACTICAL PHARMACY.*

[Continued from p. 204.]

PHOSPHORUS PILLS, PILULÆ CUM PHOSPHORO.

PILLS containing phosphorus are most perfectly made by dissolving the phosphorus in wax. The wax is put into test-tube, and liquefied by heat. When half cool, the phosphorus, dried on tissue paper, is put under the wax without touching the sides. A clean knitting needle is used to stir the mass, if this should prove necessary. The phosphorus is stirred with the needle while dissolving, and when the solution is accomplished, then the wax liquid is mixed up in a lukewarm mortar with the organic powders, etc., and the pills made only when this is quite cold.

	Gm.	gr.
℞ Phosphori.....	0.2	3½
Ol. Amygdalæ 10.0		150
Ol. Theobromæ.....10.0		150
Flor. Malvæ pulv.....q.s.		q.s.

Make 200 pills to be silvered.

	Gm.	gr.
℞ Phosphori	0.2	3½
Ceræ Flavæ 10.0		150
Ol. Amygdalæ	5.0	75
Ol. Theobromæ	5.0	75
Flor. Malvæ Pulv.....15.0		225

Melt together the wax and oils; then add the phosphorus, and agitate until it is dissolved. Next add the powder, and make 200 pills.

PILL MASSES CONTAINING SALTS, ACIDS, AND OTHER SIMILAR DRUGS.

Nitrate of silver and *salts of copper and of bismuth*, and others which are decomposed by iron, should not be mixed in an iron mortar, but in one of heavy porcelain; the best constituent agent in these cases is althæa or tragacanth; they should be given the preference over gum arabic and sugar. The salts that are easily soluble in water, of course, require but little moist additions.

Pills with acetate of potassium (*kalium aceticum*) do not keep, and deliquesce even when dispensed in glass vessels. The dispenser may be pardoned for substituting for this salt, in case of necessity, the *natrium aceticum siccum* (dry acetate of sodium), which is inferior to it in antiphlogistic action. It is better to acquaint the physician with the deliquescence of the pills of acetate of potash.

If the acetate of potassium is present to only one-fifth the weight in the mass, fairly durable pills may be obtained with a mixture of tragacanth powder, 3 parts, and the marsh-mallow powder, 1 part.

MUCILAGE OF TRAGACANTH is often added to the salts, but should not be employed as such; a suitable quantity of tragacanth powder should be mixed in the proportion of 1 part to 4 or 5 parts of the salt, and then water, or *aqua glycerinata*, added until the mass forms.

SUBLIMATE PILLS. Dry corrosive sublimate should be well triturated in a porcelain mortar after well mixing it with a small quantity of a powdery adjunct. If the vehicle is a mixture of white-bread crumb and sugar, they are not mixed immediately, so that they can be kneaded to a pill-mass by the addition of a distilled water; as there is a likelihood of having the mass too soft, and making the adjunct of a solid necessary. It were better to moisten the sugar in the first case with one-third part of its weight of water, and then to knead the dry and powdered bread crumb with it; if the crumb is fresh, no addition of water is necessary. A substitution of althæa powder for the crumb (mica panis) is not permissible. Some dispensers replace the vehicle by a mixture of salep and water. Althea powder has no other influence on the corrosive sublimate pills prepared with it than making them so hard that they are scarcely soluble in the stomach, and usually shrink after a few days to one-third their volume. This, however, is done away with to a great extent when equal parts of the powdered tragacanth and starch are taken and mixed with the *aqua glycerinata* (*glycerina diluta*) into a mass.

For the purpose of forming a pill mass:

1 part mica panis pulverata requires 1 part aqua destillata or aqua glycerinata.

6 parts of a mixture of equal parts of bread-crumb and sugar require 1 part aqua destillata.

25 parts of sacch. pulveratum require 2 parts aqua glycerinata.

3 parts of radix althææ pulverata require 2 parts aqua destillata.

FIG. 1.

FIG. 3.

FIG. 2.

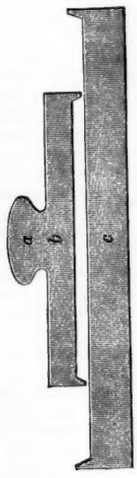


FIGURE 1.—Pill-rounder. FIGURE 2.—Section through Fig. 1, showing its construction. FIGURE 3.—Another form of pill-rounder, adapted for pills of different sizes.

1 part of radix salep pulverata requires 3 parts aqua destillata.

1 part of tragacantha pulverata requires 1 part aqua destillata.

If hydrous crystallized salts, liquid acids, and soft extracts enter into the composition of a pill mass with organic powders, the mixture frequently assumes a liquid or jelly-like consistency; but after the lapse of ten or fifteen minutes it will be of such a consistency as to permit the pills being made, or will make an excellent mass with the addition of a little althæa powder or aqua glycerinata. Nothing must be done to get the required consistency until the humidity is absorbed by the organic powders.

Blaud-Niemeyer's pills (massa ferri carbonatis, U. S. P.) are prepared from the ferrum sulphuricum crystallisatum and the kalium carbonicum siccum (dry carbonate of potassium) in the following manner. In the first place, the iron salt is triturated to a fine powder in an iron mortar, the carbonate of potassium then added, and the trituration continued until a moist mass has been formed, which is then set aside for ten or fifteen minutes, when it is of the consistency of a thin jelly. To convert it into a plastic pill mass, it is mixed with almost three-tenths its weight of tragacanth powder and a few drops of aqua glycerinata, when it is again allowed to stand for ten minutes and then worked into a plastic pill mass. If it is too hard or crumbly, a few drops of aqua glycerinata will suffice to change it into a good pill mass.

If bicarbonate of soda is prescribed with the crystallized sulphate of iron, both substances are well mixed and moistened with a few drops of water or aqua glycerinata. It is then put aside for half an hour and stirred up until the carbonic acid that has been liberated has passed off. The pill consistency is obtained with water or preferably with aqua glycerinata and powdered tragacanth, or althæa powder.

Pill masses containing acids must be mixed in porcelain mortars. Small additions of aqua glycerinata and of radix althææ suffice to produce good plastic pill masses.

	Gm.	gr.
℞ Pepsini sacch.	2.5	38
Rhei pulv.	5.0	45
Extr. Gentian.	1.5	24
Althææ pulv.	0.5	8
Aquæ glycerin.	0.5	8
Ac. hydrochlor..... gtt. 20		gtt. 20

Make 100 pills.

	Gm.	gr.
℞ Quininæ sulph.....	5.0	75
Cinchonidinæ sulph.....	5.0	75
Tragacanthæ pulv.	4.0	60
Gentianæ pulv.....	8.0	130
Glycerini...	7.5	120
Althææ pulv.....q.s.		q. s.
Ac. hydrochlor	5.0	75

Make 200 pills.

Pill masses containing alkaloid salts of cinchona are in as soft a state as jelly when freshly mixed, but form a hard pill mass after twenty or thirty minutes, and keep dry. As muriatic acid is volatile, the pills should be dispensed in glass bottles and not in boxes, as often is unfortunately done.

The pills, when dried, should be agitated in a small glass vessel with a few drops of the tincture of balsam of tolu, or better still, moistened with the gum mentioned below, and then dried in the air on a plate.

PILL-MASSES with *Ferrum pulveratum* or *Ferrum hydrogenio reductum* often receive additions of substances which belong more or less to the class of acids, or which, like all officinal plant-extracts, contain acid constituents. In contact with iron, therefore, in the presence of moisture, a slow evolution of hydrogen naturally takes place, because of the oxidation of the iron, and the pills swell to a varying extent. This oxidation cannot be prevented, and, on the contrary, it is promoted, and the ingredients mixed into a mass of the consistency of licorice paste and permitted to act upon each other, with occasional agitation, for several hours, at the temperature of digestion.

The following will serve as an example:

Pilulæ Aperientes Stahlii.

℞ Aloes..... .....15.0	
Ext. Colocynth.....	7.5
Ferri pulv....	4.0
Mucilag. G. Arab.....q.s.	

M. f. pil. No. 250.

Here it is the extract of colocynth, which contains some substances akin to acids which, when in contact with iron, causes the pills to swell. In this case the mode of procedure is the same as described above.

The *Pilulæ Italicæ nigræ* (Pilulæ aloeticæ ferratæ) require a hard and smooth surface. This is attained in perfection by means of the finisher. If kept for a long time, however, they sometimes crack, and become uneven and wrinkled. If, therefore, these pills are prepared to be kept in stock, the ingredients are blended into a paste, dried in a warm place, and then made into a pill-mass with spirits of wine. Pills thus prepared un-

* The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in [ ].
The use of the original text has been kindly granted by Dr. Hager.

dergo no change. These pills should be made weighing 0.1 Gm., of equal parts of dried sulphate of iron and aloes moistened with spirits of wine.

PILL-MASSES containing SALTS OF QUININE (*Chininum hydrochloricum, sulfuricum*) frequently assume a crumbly consistency, so that it is almost impossible to roll them into pills; but with a slight addition of some acid and a few drops of glycerin, their consistency becomes pliable. As a rule, the same acids that already exist in the salts of quinine are added. For this purpose, to five parts of *Chininum sulfuricum* about one part *Acidum sulphuricum dilutum*, and to ten parts *Chininum hydrochloricum* one part *Acidum hydrochloricum* and one-half part of glycerin are required. When this addition is necessary, the mixture should be made in a porcelain mortar glazed on the inner surface.

PILLS which ARE KEPT FOR A LONG TIME and become VERY HARD are considered unreliable by physicians, because the patient often passes them unchanged in the fæces. To pills of this kind an addition of *Aqua glycerinata* or *glycerin* is made. The latter addition, however, should always be restricted within narrow limits when the pill-mass contains strongly hygroscopic substances, since glycerin is a very hygroscopic body. Glycerin ceases to exhibit this quality as soon as it has taken up more than one-third of its bulk of moisture, or if it is mixed with organic non-hygroscopic powders, as, for instance, in the *Pilulæ ex Hydrargyro bichlorato corrosivo Phar. Milit. Borussicæ.*

℞ Hydrarg. Chloridi corrosivi.... .0.6
Solve in
Aquæ dest..... ...Gutt. nonnullis.
Adde
Opii pulv 0.3
Rad. Glycyrrh. pulv.....5.0
Succi Glycyrrh... ....8.0
M. exact. f. pil. 100 consp. sem. lycop.

℞ Hydrarg. Chloridi corrosivi 0.6
Aquæ Glycerinatæ..Gutt. nonnullas.
Exacte contritis adde
Opii pulv 0.3
Rad. Glycyrrh. pulv 6.0
Succi Glycyrrh.....4.0
Rad. Althææ.... .....1.0
Glycerini..... .....gtt. 10
Aquæ Glycerinatæ.....q.s.
Ut f. pilulæ No. 100.

℞ Ferri Chloridi..... .....5.0
Ext. Gentianæ..... .....2.5
Rad. Gent. pulv.,
Rad. Althææ..... ana q.s.
M. f. pilulæ 120 lycopodio consp. D. ad vitrum. Take two pills three times a day.

℞ Ferri Chloridi. 5.0
Rad. Gentian..... ...4 0
Rad. Althææ..... .....1.0
Contritis adde
Ext. Gentian 2.5
Aquæ Glycerinatæ 2.0
Contundendo fiat massa, ex qua pilulæ formentur.

Although ferric chloride is hygroscopic, this property is nullified by the presence of the powdered gentian and marsh-mallow, nor is it re-established by the glycerin, which in the *Aqua glycerinata* is likewise saturated with water.

(To be continued.)

Syrup of Hydriodic Acid in Rheumatism.

DR. J. CRAIG (*N. Y. Med. Jour.*) has, during two years past, failed to see a case of acute rheumatism which was not benefited decidedly by the use of two or three teapoonfuls of syrup of hydriodic acid in a wineglassful of water, every two hours. The dose may be diminished as the case improves, but should be continued for a week or ten days after acute symptoms have subsided.

Overcoat "Colds."

THIS is the season most appropriate for a little serious reflection on the subject of overcoats. Nothing seems more simple than to adapt clothing to the weather by the addition of an overcoat, light or heavy, as the occasion requires. It must not, however, be forgotten that just in proportion as the garment super-imposed upon the ordinary clothes is effective in producing a sense of warmth, it acts by arresting the evaporation of warm vapor from the body. This warm vapor continues to rise through the ordinary clothing, but it is prevented from escaping, and the clothes are saturated with it. The general effect is well enough while the overcoat is kept on, but the moment it is removed evaporation recommences, and the body is placed in a "cooler" constructed on the principle adopted when a damp cloth is wrapped around a butter dish, the vapor passing off, abstracting the heat, and leaving the contents of the cooler refrigerated.

The point to make clear is that the overcoat, let it be fashioned and ventilated as it may, does not prevent the underclothing from being saturated with moisture, but actually tends to make the moisture accumulate therein. This is proved by the sense of genial warmth felt while the overcoat is worn, and the evidences of perspiration easily perceived under the arms and at the sides of the chest particularly, immediately after the overcoat has been removed. Moreover, we take off the coat when we enter a warm house, and precisely at the moment when muscular activity is suspended. A very little consideration will suffice to convince the common sense thinker that nothing can well be worse managed than this process, both as regards its nature and the time and conditions of its operation. It is opposed to all the canons of health to allow the clothing to become saturated with perspiration, and then to take off the external covering and suffer rapid cooling by evaporation; while, if it were designed to do this at the worst possible time, probably none worse could be found than when muscular exercise has been discontinued.

The suggestion we have to offer is, that it would be far better policy to wear only one coat at a time, and to make whatever change may be necessary by removing a thin coat and replacing it by a thicker one when going out of doors, and the reverse when coming in. If, instead of wearing overcoats, people would wear coats of different thicknesses, according to the weather and conditions generally, they would avoid the danger of cooling by evaporation; the garments saturated with moisture would be removed, and dry off the body instead of on it. We believe no inconsiderable proportion of the "colds," attacks of lumbago, and even more formidable results of what are popularly called "chills," may be traced to the practice of wearing overcoats which arrest the ordinary process of evaporation, cause the clothing within to be saturated with accumulated perspiration, and are then removed, when rapid cooling takes place. The avoidance of this peril is to be attained by such change of coats as the condition requires.—*Lancet.*

Ichthyol.—A company has been established in Hamburg for the manufacture of various preparations of ichthyol. Its advantage consists largely in its containing 16% of sulphur and its complete solubility in water. Ichthyol wadding is reputed to be an efficacious application for burns, and ichthyol soap is recommended as an application for rough skin and as a cosmetic for actors.—*Edinb. Med. Jour.*

Jaborandi Alkaloids.

RECENT researches by E. Merck develop two alkaloids from jaborandi leaves, besides pilocarpine and jaborine. Harnack names them "pilocarpidine" and "jaboridine." On comparing the formula of pilocarpidine ($C_{10}H_{14}N_2O_2$) with that of pilocarpine ($C_{11}H_{16}N_2O_2$), it appears that the latter is a methyl derivative of the former. On further comparing the formula of pilocarpidine with that of nicotine ($C_{10}H_{14}N_2$), it will be seen that the former only differs from the latter by containing two atoms of oxygen. Harnack is therefore of opinion that pilocarpidine must be regarded as dihydroxyl nicotine, in which case pilocarpidine would be a direct link between nicotine and pilocarpine. Pilocarpine and pilocarpidine have most chemical reactions in common, but the aqueous solutions of pilocarpidine salts are not, like those of pilocarpine, precipitated by gold chloride. Pilocarpidine acts physiologically like pilocarpine, and jaboridine like jaborine. Free jaboridine is a syrupy substance; its nitrate crystallizes in columns resembling nitre. Jaborine and jaboridine, both of which are amorphous substances, do not pre-exist in the plant, but are formed by oxidation from pilocarpine and pilocarpidine. The formula of pilocarpidine is $C_{10}H_{14}N_2O_2$, that of jaboridine $C_{10}H_{12}N_2O_2$. Pilocarpine is converted into jaborine by the replacement of two atoms of hydrogen by one atom of oxygen.—*Pharmaceutische Zeitung.*

Algin.

AFTER the soluble portions of seaweed have been extracted with cold water, the weed is boiled with carbonate of soda, the solution filtered, and precipitated with sulphuric acid. This precipitate is a newly-recognized substance known as algin, and contains all the nutritious elements of sea-weed. It is, in fact, a sort of vegetable albumen. It has fourteen times the viscosity of starch, and thirty-seven times that of gum Arabic. Algin or sodium alginate in solution is precipitated or coagulated by alcohol, acetone, and collodion, but not by ether. It is precipitated by mineral acids, various salts, and by lime-water and baryta water. It is not precipitated or coagulated by alkalies or alkaline salts, starch, glycerol, or cane-sugar, nor by the ordinary alkaloids. It differs from albumen in not coagulating with heat, and from gelose by not gelatinizing on cooling; by containing nitrogen, by dissolving in weak alkaline solutions, and by its insolubility in boiling water. From gelatin it differs by its giving no reaction with tannin. Unlike starch, it gives no color with iodine, and its insolubility in dilute alcohol and dilute mineral acids renders it unlike gum Arabic, pectin, tragacanth, and dextrin. It precipitates salts of the alkaline earths, excepting magnesium, and also those of most metals, but it gives no precipitate with mercuric chloride or potassium silicate.

Among the industrial uses to which algin has been put are the sizing of fabrics; as a mordant in dyeing and printing; as an article of food, and in the manufacture of a peculiar paper. When dried and pressed, it can be turned and polished. It forms an excellent agent for preventing boiler incrustations when used in the form of sodium alginate, and in pharmacy it is said to be useful for emulsifying oils, making pill-masses, and for refining alcoholic liquors.—S. P. SADTLER in *Amer. Journ. of Phar.*

Antipyrin and Spirit of Nitrous Ether, according to Dr. Eccles, are incompatible.—*N. Y. Med. Journ.*

IMPROVED SPECIFIC GRAVITY BALANCES.

MOHR'S specific gravity balance has been repeatedly slightly modified and improved, but the original principle of construction has generally been maintained.

In NEW REM. for 1877, we gave a description of an improved form of the balance, designed by Westphal. We procured one of these for our own use, and have found it to be exceedingly serviceable and trustworthy. As will be seen from the illustration, the specific gravity of a liquid is taken by immersing in it a float containing an accurate thermometer, and then restoring the equilibrium of the balance by attaching weights (riders), to the beam, each of which corresponds to one of the decimal spaces in a fraction having 4 decimals. At 15° C., therefore, the spec. grav. of a liquid lighter than water is found by merely reading off the figures of four notches in which the riders are placed. In the case of liquids heavier than water, an extra weight is suspended from the end of the beam, which corresponds to the number 1, intended to precede the decimals.

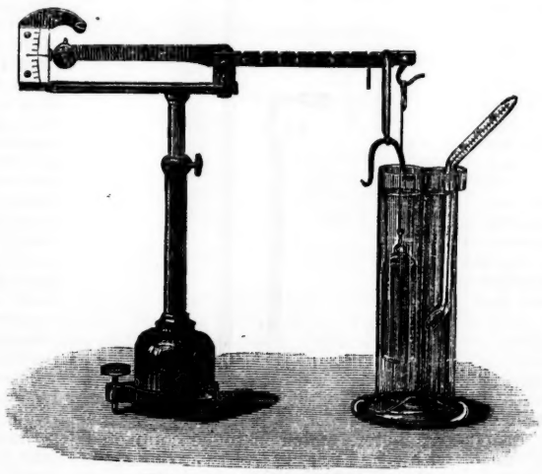
In our succeeding volume (NEW REM. 1878, page 322), we described another form of the same balance, designed by L. Reimann, of Berlin. In this, the float is likewise connected with a thermometer.

It has, however, been found by experience that these thermometer floats are sometimes inconvenient. It happens not infrequently that the thermometer breaks, and as the weights accompanying the apparatus are adjusted so as to exactly correspond to the particular float supplied at the same time, they would not usually be equivalent to a new float that might be ordered and supplied to distant customers, who cannot well send the whole apparatus back.

[We have so far been lucky enough to preserve the original apparatus unbroken. Yet we have been assured that exactly identical duplicate floats of Reimann's balance can be obtained at any time. —ED. A. D.]

To do away with this drawback, C. Rumann (with F. Sartorius, of Göttingen) has separated the thermometer from the float itself.

In this way it has become more easy to make the floats of exactly unif orm size and weight, so as to be readily interchangeable. The new form of balance is shown in the accompanying illustration (after *Chemiker Zeit.*).



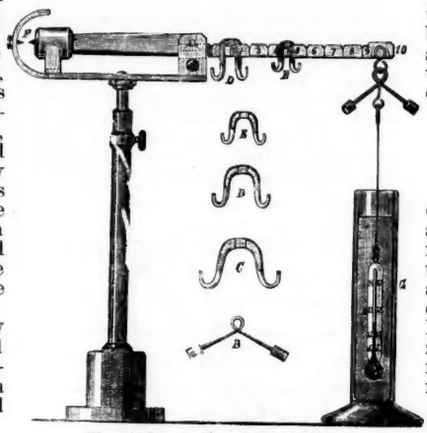
Rumann's specific gravity balance.

Removing Superfluous Hair.

F. F. G., of Phillipsburg, Pa., asks the *Druggist's Circular* for a mode of removing hair, and is given a formula taken from the *Independent Record* for a paste of *calcium hydrosulphate* which it recommends as the most reliable depilatory. 100 parts of good calcined lime are moistened with 50 parts of water, and, when slaked, diluted with 200 parts of cold water. The gas from the decomposition of 300 parts of sulphide of iron by 200 parts of sulphuric acid are conducted into the solution, contained in a suitable vessel and the product secured in tightly closed vessels, where it will keep but a few weeks, at most. This is known as *Böttger's paste.*

The Turkish paste called *Rusma* consists of slaked lime, 50 parts; starch, 30 parts, and orpiment, 5 parts, to be mixed with water. Either of these are to be applied in a thin layer to the surface to be denuded, and after about ten minutes, washed off with water.

[Either of these is apt to cause inflammation and deep sores, and neither prevent the renewal of the hair, since they merely soften the hair, so as to permit it to be easily extracted from the hair follicles. A much better plan is the one suggested by Drs. Piffard and Fox, of New York, which has been successfully practised in a considerable number of cases. It consists in the destruction of the hair-follicles by means of a galvanic current. To accomplish this, a fine platinum needle,



Westphal's specific gravity balance.

fixed in a suitable handle, and connected with one of the poles of a battery, is inserted along the side of a hair into the follicle. The electrode connected with the other pole is placed on the surface of the body wherever convenient. The passage of the current is attended with destruction of the follicle as shown by the formation of bubbles of gas and loosening of the hair which comes away with slight effort. This operation is somewhat tedious, as it has to be repeated for every hair, but it is certain, and not liable to be followed by bad scars.—EDITOR AMER. DRUGGIST.]

Cockroach Exterminator.

G. P. M., of Chicago, is answered by the *Druggist's Circular* with the following, taken from Killner's work:

"Wheat flour, 2 oz.; powdered sugar, 4 oz.; powdered borax, 1 oz.; unslaked lime, 1 oz. Mix thoroughly and keep dry. Place on paper in places infected. Repeat several nights."

[Powdered borax, alone, has for some time been used by sprinkling it freely in places frequented by roaches, but a correspondent of the *Chemist and Druggist*, some years since, said that he got the best results from using the borax in the form of a lump, by getting the roach between the lump and the floor and applying strong pressure. Be that as it may, powdered borax will prove effectual *if care is taken to exclude access to water*, and it matters little what is used, if leaky sinks and faucets are allowed to drip so as to furnish a supply of water, without which roaches cannot exist. In a recent number we mentioned the experience of some one who had remarkable success with the rind of cucumbers, which was placed where they could reach it during the night. Taking advantage of the need that roaches have for water, it is sometimes customary to trap them by placing water in the bottom of a vessel with smooth sides, and arranging a stick for them to reach the top from the floor; once in they cannot get out.]

Solubility of Mercuric Iodide.

IN view of the fact that certain chemicals, when dissolved in water or alcohol for subsequent incorporation in ointments, are not only liable to undesired reaction with water, but also in danger of crystallizing out on evaporation of the menstrua, Dr. C. Méhu, of Paris, pointed out that benzoate of iron, valerianate of zinc, and ferric cinnamate can be dissolved in fatty oils, and that thereby a more elegant and reliable compound will be obtained. In a paper read at the International Pharmaceutical Congress at Brussels he records observations concerning the solubility in fatty menstrua of biniodide of mercury. Oil of almonds will dissolve enough biniodide to satisfy most of the requirements of therapeutics. By triturating in a porcelain capsule on a steam-bath, 65 centigrammes can be perfectly dissolved in 50 grammes in about a quarter of an hour. This is about 13 parts in 1,000; but about two-thirds of this will be deposited on cooling. After numerous experiments, Dr. Méhu concludes that about 4 parts in 1,000 is about the practical limit of solution of biniodide in oil of almonds which will keep without depositing in all ordinary temperatures. The addition of iodide of potassium renders the biniodide much more soluble. It is easy to dissolve 50 parts of the compound $HgI_2.KI$ in 1,000 parts of almond oil. Olive oil had much the same effect as a solvent as almond oil. Poppy-seed oil will keep 10 parts of biniodide in 1,000 without depositing. Nut oil will retain 13 parts in 1,000. Castor oil will dissolve 40 parts in 1,000 when hot, and will only deposit about half that quantity. This oil appears to meet every requirement. In 1,000 grammes of castor oil at the temperature of a steam-bath, it is easy to dissolve 80 grammes of biniodide and 48 grammes of bichloride of mercury, from which only a small proportion deposits. The compound $HgI_2.KI$ can be dissolved in five times its weight of castor oil at 100° C., and only deposits traces on cooling. Lard will only retain in solution (without crystallization) up to 4½ parts per 1,000. Vaseline will not dissolve more than 2 parts per 1,000 when hot, and deposits almost the whole on cooling. Carbolic acid at 100° C. will dissolve rather more than 20 parts in 1,000, and deposits rather more than half on cooling. Benzin will dissolve 20 parts in 1,000, but will not retain more than 4 parts on cooling.—*Chemist and Druggist.*

Oil of Man.

THE following is an abstract of what Moses Charras says in his Royal Pharmacopœia (1678):—"Two or three skulls from healthy men (recently hanged or otherwise have met a violent death) are well cleaned and placed in a clay retort. Various precautions are taken to keep the contents of the retort from foreign contamination, and a gentle furnace heat is applied until 'volatile salt spirits, accompanied with oil, distil over.' The oil is to be rectified. 'The oil, as well as the salt, may be taken internally. . .. The dose of the oil is two to three drops to eight or ten in some liquors, etc. . . . You may also use it to anoint the temples or the entries of the skull, or put it up the nostrils. . . . Substances very much like to those which are extracted from the skull of man may be drawn out of all the bones, observing the same method in their distillation.'" *Oleum animale*, though from indifferent bones, would be a fair substitute for this product.—*Chemist and Druggist.*

Solution of Silicate of Sodium.

SOLUTION of silicate of sodium is officinal both in the U. S. and in the Germ. Pharm.

The Pharmacopœia Committee of the Germ. Pharm. Soc. proposes the following as tests or requirements of purity:

"1 C.c. of water-glass (*Liquor Natrii Silicici* or Liquor Sodii Silicatis U. S.), dissolved in 10 C.c. of water and acidulated with hydrochloric acid, should not effervesce, and should not be affected by solution of hydrosulphuric acid. On triturating together, in a capsule, equal parts of water-glass and alcohol [sp. gr. 0.830–0.884], an ample amount of a granular, but not a pulpy or smeary salt, should be separated; the filtered liquid should not impart a brown color to turmeric paper."

The following comments are added by the committee: In assaying water glass to be used for dressings, particular attention is to be paid to the presence of any free caustic alkali or its carbonate, as either of them would have a caustic effect upon the skin. Carbonate would be revealed by the effervesence when acids are added. Any caustic alkali would be found by the test with alcohol. Only the trisilicate and the tetrasilicate of sodium separate a *granular* silicate when the water-glass is triturated with an equal weight of alcohol. The bisilicate yields a smeary resinous salt, and the sesqui- and monosilicate a thin pulp. In the case of the tri- and tetrasilicate, the alcoholic filtrate has a neutral, in the case of the bisilicate a faintly alkaline, and in the sesquisilicate a distinctly akaline reaction. Since red litmus paper has occasionally been found to be rendered slightly blue even by water-glass of known excellence, turmeric paper has been prescribed as test, as this was not affected under the same circumstances.

The test for metallic impurities with solution of hydrosulphuric acid is best made in the acidulated solution (1 in 10).

The officinal test of the Germ. Pharm. requires the absence of metallic impurities, but says nothing about any alkalinity or caustic effect.

The U. S. Pharm. says nothing about the absence of metallic impurities—since only iron is likely to be found in it in any considerable quantity—but requires it to be free from any caustic effect on the skin. This is rather indefinite, and the test is one which will be usually shunned or declined.

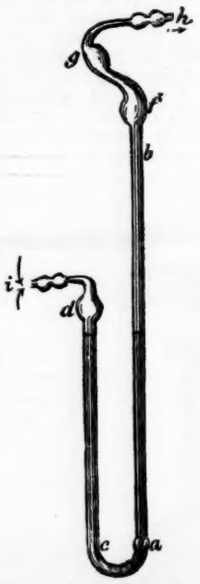
We think the recommendations of the Germ. Pharm. committee worthy of adoption in our Pharmacopœia.

VACUUM REGULATOR FOR FILTER PUMPS.

IN using the filter or vacuum pumps described in our last number, it is generally difficult to regulate the rate of exhaustion so that it shall not exceed a certain limit. Supposing, we desire to filter a rather large quantity of liquid without pulling it, as it were, too quickly through the filter, and we, therefore, do not require the full pressure of the atmosphere (760 millimeters), but perhaps only half this pressure (380 millimeters), it is indeed possible, by careful adjustment and constant watching of the vacuum gauge, to maintain this pressure uniformly, but if the apparatus is left alone, or if the filter should become clogged, the exhaustion may become irregular, and perhaps exceed the desired limit. To remove this drawback, and to prevent the limit being exceeded, Nikolaus von Klobukow has devised an adjustable two-armed

FIG. 1.

FIG. 2.



Klobukow's Vacuum Regulator.

barometer, which is to be connected with the vessel to be exhausted, and by the position or inclination of which the rate of exhaustion is regulated. The short arm of this barometer is, of course, open to the outer air. The other end is connected with the vessel to be exhausted, which is next connected with the filter-pump, and the latter with the water-supply. The barometer is fastened upon a board which may be inclined by a central screw in any direction, and the rate of inclination may be read off from a graduated semicircle. When the filter-pump is started, the air contained in the vessel bearing the funnel is gradually rarefied or exhausted. But, as the vessel communicates with the long leg of the barometer, the rarefaction will cause the mercury contained in it to ascend the long tube until the latter is filled. Of course, it should have the proper height (over 30 inches) so that the mercury cannot be drawn over into the exhausted vessel. If the barometer has been exactly perpendicular during the exhaustion, and the latter is pushed to an extreme, nothing further can happen but that all the mercury would be drawn into the longer leg. If, however, the barometer has been inclined, as for instance in Fig. 1, then the *perpendicular* height of the column of mercury is decreased, and it thereby no longer counter-balances the full pressure of the atmosphere. Supposing the barometer were placed entirely horizontally, then all the mercury would also be in the longer leg, but the outer air would have easy access all along its upper surface, where a channel would be formed to let it pass. If, therefore, the filter-pump produces at any time, while the two-armed barometer is in an inclined position, any greater exhaustion than the column of mercury in the barometer can counterbalance, a corresponding quantity of air will be sucked or aspirated through the column of mercury into the exhausted vessel, until the equilibrium has been established. By properly marking the degrees on the semicircle with the rate of pressure corresponding to each, the same degree of pressure or exhaustion may at any time be established or maintained, merely by inclining the barometer to this point.—*Zeitsch. f. anal. Chem.*, 1885, 400.

Pyridine in Asthma.

PROF. GERMAIN SÉE (*Bull. Thérap.*) attributes the usefulness of many of the reputed cures for asthma to the existence in them of an organic substance known as *pyridine*. This body (C_5H_5N) is found in the products of the dry distillation of organic matters, such as tar, the principal alkaloids, the smoke of tobacco and nicotin, together with a series of bodies lately studied by Oeschner in Dippel's oil [Pyridine does not exist in all of these substances in a free or readily separable state. In some of them, as, for instance, certain alkaloids, it is one of the constituents of the *molecule*, and is not individually responsible for any of the physical, chemical or therapeutic properties of the compound.—ED. A. D.] from which it is ordinarily derived. It is a colorless, very volatile liquid, with a strong and penetrating odor, miscible with water in all proportions, and forms with mineral acids soluble but instable bases. Prof. Sée considers iodine to be *par excellence* the remedy for asthma, no matter from what cause it comes; but where iodism is produced, and another remedy is required to replace it, pyridine may be used as a palliative of the attacks, and is superior to hypodermic injections of morphine, its action being much more persistent and inoffensive.

The best mode of administration is by inhalation. The 4 to 5 grammes of pyridine being placed in the center of a room of about 25 cubic meters capacity, the patient occupies an angle of the room, and for twenty to thirty minutes breathes an atmosphere charged with the vapor. This may be repeated thrice daily.

Nitrite of Sodium in Gouty Epilepsy.

DR. J. MORTIMER GRANVILLE (*Brit. Med. Journ.*) recommends the following in epilepsy dependent upon a gouty taint:

℞ Sodii nitritis..... .....gr. xxxvi.
Sodii hippuratis..... ʒ iij.
Infusi serpentariæ.....ad ℥ xij.

M. Two tablespoonfuls three times daily, before meals. The dose of nitrite of sodium may be increased by one grain after each fit which occurs subsequently to the commencement of the treatment. The mixture should be used regularly for three or four months; the dose of the sodium nitrite being increased, as above suggested, until it reaches 15 grains.

Resorcin in Gonorrhœa.

DR. A. J. MUNNICH advises the use of an urethral injection of a 3% solution of resorcin every two hours during the day, and at least twice during the night; the fluid being allowed to flow away immediately. During the treatment, which should be continued about a fortnight, the abundant use of milk or water is recommended in order to increase the flow of urine and wash the pus from the urethra. The frequency of injections may be reduced, after the fourth or fifth day, when the discharge is diminished, to three or four times daily, and once at night.

[Many cases of gonorrhœa would recover within two weeks with no injections whatever and the use of copious bland drinks; and it would doubtless answer quite as well to use, in the way above described, a solution of common salt or sulphate of soda of the same strength, to avoid the irritation which would be caused by pure water.—ED. AM. DRUGGIST.]

Improved Fehling's Solution.

FEHLING'S solution, as usually prepared, is a very unstable mixture, the cause of the trouble being the Rochelle salt or neutral tartrate of potassium, whichever it may be, that has been used in its preparation. For this reason it is preferred by many chemists to keep the solution in two separate portions, to be mixed in definite proportions when wanted.

Some time ago, it was proposed to remove this drawback by replacing a good deal of the water in the solution by glycerin. We have been intormed that this plan was moderately successful.

Quite lately, Prof. Schmiedeberg proposed to replace the alkali tartrate by *mannite*. The formula is as follows:

Copper sulphat. cryst....	....34.632	Gm.
Mannite.....	.....16.	Gm.
Solut'n of soda, sp. gr. 1.145, 480.		C.c.
Distilled water	.....q. s.	

Dissolve the sulphate of copper in about 200 C.c. of the water, add the mannite, previously dissolved in 100 C.c. of water, then add the soda solution, and finally make up to one liter with water.

If *pure mannite* is used, the resulting solution is much more stable than that made with Rochelle salt. Even should it deposit a small trace of oxide of copper (perhaps caused by slight impurities), after standing some time at the ordinary temperature of the room, the supernatant solution will not become clouded or decomposed by boiling, and and may still be used for the quantitative estimation of glucose.—*Chem. Zeit.*

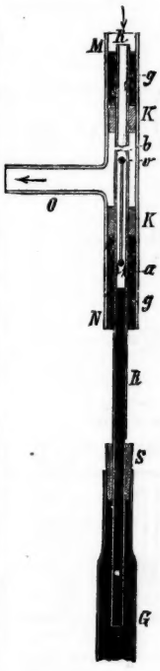
[NOTE OF ED. AM. DR.—Mannite is a saccharine substance, chemically speaking, a sexatomic alcohol, $C_6H_{14}O_6$—which occurs in various plants, such as Apium graveolens, Canella alba, Syringa vulgaris, some sea-tangs, aconite root, in olives, and in Agaricus integer (which contains about 20% of of mannite in the dry substance). Usually obtained from manna, an exudation of Fraxinus Ornus.

It is extracted from the latter by dissolving manna in half its weight of water, adding white of egg, raising to a boil, and filtering while boiling. The separated mannite is pressed, kneaded with cold water, again pressed, dissolved in six to seven parts of hot water, then treated with animal charcoal, and the filtered solution set aside to crystallize. It ought to be purified by recrystallization from alcohol. Before using it as a constituent of Fehling's solution, it should be tested with the solution, as ordinarily made, to insure the absence of any substance capable of reducing the copper.]

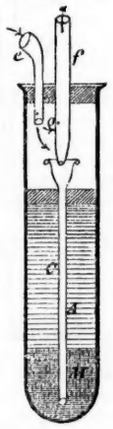
THERMOREGULATORS.

THAT perfection is far from being reached in the case of heat regulators is evidenced by the numerous forms of construction proposed. In the following we give a description of several which have been recommended.

1. *Kreusler's Thermoregulator* (*Chemiker Zeit.*, 1884, 1,321). A stout glass-tube *R* is contracted by careful heating at *a*, and afterwards cut off with a file some distance above this place (at *b*). Both pieces of the tubing are then passed through cork-rings, bored exactly centrally, so that, when the ends of the two tubes are pushed together to within ¼ Mm. (at *b*) the bore of the two tubes will be exactly continuous. A small float is now inserted into the bore. This is made by taking a thin glass rod and fusing small glass balls at each end. One of these, *v*, should be large enough to *almost* fill the bore, yet so that a very small quantity of gas may pass by. The other ball may be much smaller, and need only be large enough to be arrested at the contraction. The T-piece MNO is also made of glass. *G* is a reservoir for mercury, provided with an absolutely tight stopper *S*, and placed into the water-bath or other heating apparatus, in which a constant temperature is to be maintained. When the mercury expands, it will rise in the tube *R*, pass the contracted point, and



Kreusler's thermo-regulator.



Randolph's thermo-regulator.

raise the float until the ball *v* rises as far as *b*, when the main supply of gas will be shut off, and only enough will pass to keep up a small flame. The gas passes in the direction of the arrows.

2. *Randolph's Thermoregulator.*—A small quantity of mercury, *M*, is poured into a test tube, and some alcohol poured on top of it. A rubber-stopper, carrying a small funnel with long stem, is then pushed down on top of the alcohol. The mouth of the test-tube is closed by another rubber-stopper carrying two tubes; one, *c*, being connected with the gas-supply, while the other extends to within the cup of the little funnel, and has, besides, a small hole at *o*. When the heat expands the alcohol and mercury, the latter is pushed up into the funnel until it finally closes the orifice of the tube *f* (leading to the gas-burner), thereby cutting off the main supply of gas, and permits only enough of the latter to pass through the orifice *o* to keep a small flame burning so that the flame in the burner may blaze up again when the current of gas is restored.—*Journ. Frankl. Inst.*

[NOTE.—In this and all other similar arrangements, it is supposed that the diminished supply of gas passing through the small orifice *o* will deliver just gas enough to the burner to keep a very small flame lit. When the burner is new and clean, and the adjustment of the whole apparatus is perfect, this will be generally the case. But very often it will happen either that the flame in the burner, on being reduced very low, will strike back and kindle the gas inside of the tube, thereby producing heat and a sooty flame; or, the flame will go out altogether. If an apparatus of this kind begins to play pranks and cannot be trusted safely for any length of time, without being watched, it is better to provide a separate small burner, such, for instance, as is used in cigar stores for lighting cigars, which is fed with gas independently of the main burner, and the flame of which is so situated that it may at any moment rekindle the gas issuing from the burner.—ED. AMER. DRUGGIST.]

Local Application for Gout.

DR. ROTHE recommends for gouty joints the repeated use of cold douches, followed by applications of the following lotion:

Liquor. plumbi acetatis..	parts,	15
Spiritus vini...	"	25
Tr. opii ammoniat.....	"	5
Aquæ fortis.....	"	300

Apply with compresses, and cover with rubber tissue. Great relief from pain is said to follow.—*Memorabilien.*

Quillaia Bark as an Expectorant.

DR. KOBERT recommends, as an expectorant, a decoction made with 5 grammes of soap-bark and 200 grammes of water, of which adults or children may take a dessertspoonful or a teaspoonful, respectively.

The glucosides which give to senega its expectorant properties are said to exist in much greater degree in quillaia bark, and the use of the latter is said to be preferable, as it causes neither diarrhœa nor vomiting, and is more agreeable in flavor. The decoction is sweetish, and is readily taken by children.—*Centralbl. f. Klin. Med.*

Uses of Sulphuric Acid.

SOME of M. Pasteur's latest experiments have proved that water containing 2 per cent of concentrated sulphuric acid possesses the property of destroying bacteria, and this mixture of acid and water is recommended for disinfecting efficaciously the floors of stables, mangers, cattle-stalls, court-yards, areas of dwellings, dust-bins, etc. Sulphuric acid, properly diluted, is a valuable cooling and astringent remedy. It is used to acidify certain decoctions or infusions. Only the dilute acid (in most countries, one part pure acid, nine parts water) is ever used medicinally. Ten to twenty-four drops of this dilute pharmaceutical acid will give an agreeable acidity to one quart of the infusion or other liquid. As many fever patients are fed principally on milk, care must be taken never to give liquids containing sulphuric acid, or acid lemonades of any kind too soon after milk has been given, otherwise it may produce unpleasant symptoms of indigestion. In France, an alcoholized sulphuric acid is sometimes used. It is made by adding concentrated sulphuric acid, 100 parts, to alcohol (of 85 per cent), 300 parts, and is generally colored red by the addition of 4 parts of the petals of the red poppy. Sulphuric lemonade is made from this according to the formula:

	Parts.
Alcoholized Sulphuric Acid..	3
Simple Syrup.....	60
Water.....	1,000

This is also known as "mineral lemonade."—*Chemist and Druggist.*

The Assay of Potent Drugs and of their Preparations.

DR. OTTO SCHWEISSINGER, of Heidelberg, has recently contributed several interesting papers on the subject of assaying powerful crude drugs and their preparations, to the *Pharm. Zeitung*, No. 64, and the *Archiv der Pharmacie* (3), vol. xxiii., 609, from which we take the essential portions.

1. *Assay of Extracts of Hyoscyamus and Bellodonna.* The author uses the following method:

1 to 2 Gm. of the extract was warmed for about one hour with 20 Gm. of diluted (1 to 20) sulphuric acid, on a water-bath, then allowed to cool, filtered, the residue washed first with a little diluted sulphuric acid, then with water, the filtrate rendered alkaline by ammonia, and shaken with 2 or 3 successive portions of about 15 Gm. of chloroform. Two such agitations were generally found sufficient. This process does not differ much from that previously recommended by others, or that lately given by Dr. Squibb in the *Ephemeris*, but the author accompanies it by a few useful practical hints and data. He recommends that the chloroform should be allowed, each time, to remain in contact with the liquid for a few hours. When the chloroform is removed, it often happens that a few drops of the aqueous liquid containing the sulphate of ammonium are carried over with it. In order, therefore, to obtain the alkaloid in a pure state on evaporation, it is necessary to redissolve the residue with chloroform. It is not recommended to filter the chloroformic solution.

He also quotes data which show that two agitations with chloroform are usually enough, at least in the case of atropine.

[*Note.*—If the operator is careful and has some experience, it is not usual that any of the aqueous liquid is accidentally withdrawn together with the chloroformic solution. It is best to perform the operation in a separator having a fine exit tube with a well-ground stop cock. When the two layers have separated, and the dividing line can be sharply recognized, the chloroformic layer is allowed to run out until the dividing line nearly reaches the stop-cock. The second and subsequent shakings are then drawn off in the same manner. Finally, by means of a funnel having a fine orifice bent upwards, a small quantity of pure chloroform is allowed to flow gently on the surface of the still remaining chloroformic liquid, and the latter then drawn off as far as possible without allowing the aqueous liquid to come through. Instead of thus pouring fresh chloroform in, a little disulphide of carbon will sometimes answer. In most cases it is not necessary to add anything, but sometimes it is difficult to distinguish the exact line of demarcation, and in such cases the above will be found a useful hint. In a general way, it may be stated that the separation of the aqueous liquid and chloroformic (or other volatile) menstruum will take place more rapidly and sharply, the greater the difference between their specific gravities is, and the less excess of alkali has been added. This often produces a sort of soap which separates with great difficulty.—ED. AM. DRUGG.]

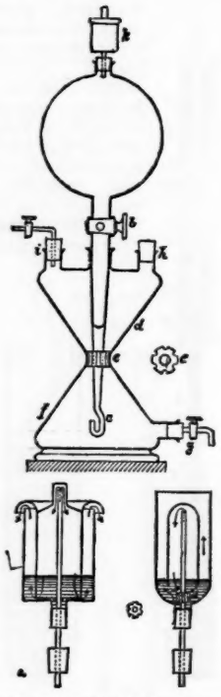
In a German extract of belladonna, about one year old, the author found 1.1 per cent of atropine. In two other samples, recently prepared according to the Germ. Pharm., he found 1.4 and 1.45 per cent respectively.

2. *Extract of Opium.*—The Germ. Pharm. gives a process of assay for this preparation, and requires it to contain at least 11 per cent, which is altogether too low, considering that the German officinal opium must contain at least 10 per cent of morphine, and that opium yields between 50 and 60 per cent of extract. As Hager recommended, the preparation should be adjusted to a uniform strength of 20 per cent of morphine.—After *Pharm. Zeit.*

[*Note.*—Something like this should also be provided for in the U. S. Ph., where extractum opii is not defined in strength. Officinal opium is required to contain not less than 9 per cent of morphine, and, when dried, should yield between 55 and 60 per cent of *dry* aqueous extract (U. S.). It will, therefore, be easy to provide a formula for an extract of opium containing 20 per cent of morphine.]

3. *Assay of Strychnine and Brucine.*—The author has investigated Dunstan's and Short's method of separating strychnine and brucine by means of ferro-cyanide of potassium, and comes to the conclusion that it is not reliable.

For the determination of *strychnine*, when present alone (without brucine) in a solution, the author found that



Reinhardt's sulphuretted hydrogen apparatus.

tolerably uniform results may be obtained with one-tenth normal solution of iodine. No reliable results, however, could be obtained with this in the case of brucine or a mixture of strychnine and brucine.

Either alkaloid, or both together, when present in a solution (without other alkaloids), may be determined by means of volumetric solution of iodohydrargyrate of potassium, according to Dragendorff, or by weighing them as hydrochlorides.

Very close results may also be obtained, according to the author, by determining the quantity of either alkaloid with $\frac{1}{100}$ normal hydrochloric acid (containing 0.365 Gm. of absolute hydrochloric acid in 1 liter. That is, 1 C.c. of normal volumetric solution of soda would require for complete neutralization 100 C.c. of the acid.).

0.01287 Gm. of strychnine corresponds to 0.001415 Gm. of hydrochloric acid, or 3.87 C.c. of the $\frac{1}{100}$ volumetric solution.

0.0131 Gm. of anhydrous brucine corresponds to 0.001214 Gm. of HCl, or to 3.60 C.c. of the $\frac{1}{100}$ volumetric acid.

The applicability of this method to *mixtures* of strychnine and brucine requires to be assured by further experiments.—After *Arch. d. Pharm.*

IMPROVED SULPHURETTED HYDROGEN APPARATUS.

ON page 145 of our volume for 1884, we described an apparatus for generating sulphuretted hydrogen, devised by C. Reinhardt, which had many advantages over other forms. Experience, however, has shown that it could be still further improved and simplified, so as to take up less room and be less liable to breakage. In its new form, the apparatus is constructed as shown in the cut.

Fig. 1 shows a globe-funnel *a*, having a faucet *b*, and a bent exit tube *c*. The end is turned up for the purpose of not disturbing the dense solution of ferrous chloride when new liquid is allowed to flow down the funnel. The receptacle *d* is charged with ferrous sulphate through the neck *b*, which is afterward closed with a rubber-stopper. The generated gas escapes through the delivery tube fixed in the other neck (*i*). The upper half of the generator *d* communicates directly with the lower half *f*, which contains the acid liquid, and the dense iron solution, the stopper *e*, through which the neck of the funnel passes, being notched, as shown in the little cut by the side of Fig. 1. The faucet *g* serves for drawing off the dense iron solution when necessary. Whenever the stream of gas is shut off by closing the stop-cock in the delivery tube *i*, the accumulating pressure of gas in *d* will drive the upper layers of the acid liquid in *f* back into the globular funnel. In order to permit the air contained in the latter to escape without contaminating the atmosphere of the room, the neck of the globe-funnel is closed with a stopper carrying a vessel charged with solution of potassa constructed as shown either in Fig. 2 or Fig. 3, the direction of the current of air being indicated by the arrows. Fig. 2, according to the author, is constructed of tinned iron and rubber stoppers; Fig. 3 consists of glass and rubber. The principle by which either of them works is easily intelligible, and the construction may be varied in many ways.—*Dingl. Polyt. Journ.*, 257, 73.

Mixture of Bromides.

IT is by many appreciated that a mixture of several bromine salts is less likely to cause bromism, acne, and other inconveniences, when considerable doses of a bromide have to be long continued in the treatment of epilepsy. Erlenmeyer recommended the use of 5 grammes each of the bromide of ammonium, potassium, and sodium, in 250 grammes of water; but a recent writer in the *Canadian Practitioner* has found the following to be far superior to this combination:

Bromide of Ammonium..	1.80	grammes.
Bromide of Sodium,		
Bromide of Potassium, āā	3.90	"
Distilled Water	120 00	"

To be taken in teaspoonfuls during twenty-four hours.

Hippurate of Sodium.

GARROD demonstrated the effect of hippurate of sodium in decomposing uric acid, and Dr. Bon (*Journ. de Méd. de Paris*) advocates its employment in affections characterized by an excess of that acid. His formulæ are as follows:—

Hippurate of Sodium...	80 grains.
Carbonate of Lithium...	24 "
Glycerin.....	½ oz.
Cinnamon Water	8 "

A tablespoonful four times daily.

Hippurate of Sodium..	100 grains.
Chlorate of Potassium..	22 "
Simple Syrup.....	6 drachms.
Peppermint Water.....	6 oz.

A tablespoonful four to six times daily.—After *Chem. and Drugg.*

CORRESPONDENCE.

The Status of Hospital Stewards in the Army.

Editor American Druggist:

SIR:—Permit me respectfully to remark that your correspondent, "Army," in the August number of your excellent journal, while deservedly chastising "Hospital Steward," U. S. A., errs himself, and purposely underrates the quantity as well as the quality of the hospital steward's work.

Under a great majority of the medical officers of the Army, the steward does nearly everything except prescribe for the sick, perform surgical operations, and look after the hygiene of the command. Yea; he does a good deal of minor prescribing too. He is *de facto and de jure* the sole and only apothecary for so many officers, soldiers, and civilians, and their families; and this fact alone should entitle him to the sympathy and co-operation of the pharmaceutical profession. How much more is he entitled to the sympathy and aid of the medical corps of the Army, whose work he performs.

He makes out all the reports and returns, and keeps all the records, receiving only very brief directions from the surgeon in their preparation. In this are included the Consolidated Report of the Medical Department at the end of each month—a document of no small difficulty—a register and prescription book, a case and diet book, letters and a letter book, an order book, an indorsement book, a file of letters received, and index book, a medical history of the post book, a morning report to the commanding officer, a hospital fund book, and three monthly reports thereof, monthly reports of medical officers, hospital stewards, and hospital matrons, muster and payrolls of hospital and general non-commissioned staff officers at the post, made every two months, a descriptive book of the general non-commissioned staff officers at the post, and a clothing account book of the same. Every three months he makes out returns of clothing and camp and garrison equipage, and a return of quartermaster's stores. Once a year, or oftener if there be many changes of post-surgeons, he makes the return of medical property in triplicate—a good week's work. A return of durable property, a requisition for medical supplies, instruments, stores, furniture, etc., for the ensuing year. A return of hospital records, plans and estimates for the construction of a new hospital, or repairs and alterations to the old one. And other reports and returns to meet special cases.

Nearly all these papers are made in duplicate, some in triplicate, besides being copied into the record books. I respectfully assure "Army" that the clerical work alone of a steward amounts to at least five hours daily. He is druggist, clerk, storekeeper, head nurse, first sergeant, and general assistant to the post-surgeon.

Then, the assertion of "Army" notwithstanding, he is under nearly all medical officers in sole and absolute charge of the hospital property. True the surgeon is directly responsible, and no losses can be charged against the pay of the steward, except after trial and conviction of gross carelessness or dishonesty, for which he can and probably will be sent to a military penitentiary; but while the responsible medical officer may be compelled to make good the loss, his responsible steward is a ruined man in character, and spends a tenth part of his life in durance. This looks like a very practical division of property responsibility, with the actual work on the shoulders of the steward!

All day, and perhaps all night, the steward watches the sick, and not only carries out the surgeon's orders, but supplements them here and there from his own resources of knowledge and experience. On his faithful observation often depends the weal or woe of human beings. He relieves the surgeon of the trouble of giving hypodermic injections and using the clinical thermometer, pulls teeth, does all minor surgery, and assists at the major. He watches and instructs the cooks and nurses, repairs the instruments, and sees that everything is ready for immediate use in case of emergency; he is held responsible by the surgeon that the supplies are kept up by timely requisition; he assists at autopsies and does the nastiest part of the work, in order to spare the feelings and sensibilities of the nurses who are not, like himself, used to the disgusting details, and he is held responsible by the surgeon for the discipline and cleanliness of every part of the hospital.

Woe to the steward if anything happen by day or by night, and he be not promptly on hand with everything ready. His cares are endless. He is always on duty. Yet according to "Army" he has little work and less responsibility.

All this for $30 per month. True, as "Army" darkly hints, at *some* posts he has other sources of revenue, but that depends on the humanity and sense of justice of the post surgeon, and it is a fact that if he be a married man, the steward's wife *must* needs become a washerwoman, or he cannot support his family.

The assertions of "Army" notwithstanding, the steward's social status is *not* what it would be in civil life for the quality of work performed by him. As an enlisted man, he has no social status. His bearing and acquirements may make him friends in respectable civil society, but let those friends visit him and observe his position and the treatment accorded him as an enlisted man, and they will pityingly and gently give him the cold shoulder. The intelligent steward does not aspire to social intercourse with officers and their families, but he does aspire to a social status of a higher grade than that of every common soldier—impossible to him so long as he remains an enlisted man.

The Government, or its officers, demand of us services which require skill, intelligence, special training, some degree of scientific knowledge, integrity, and habits of care and sobriety, yet few of those officers are in favor of giving us a status corresponding with the nature of our duties, and I am forced to conclude that their reasons are selfish, under the belief that we are best under control as we now are. This is wrong, and this wrong, more than the scantiness of our wages, makes us dissatisfied with our position. Why, then, do we not leave this ignominious position? I and others like me have been over a quarter of a century in the service; have served the country honestly and zealously throughout a great crisis. Shall we now, in the post-meridian of our lives, enter the service of a new master, upon whose charity and gratitude we have no claim? In 1862 my pay was $35 per month; now, after over twenty years more of honorable service, I receive $33 per month because I was out of the service for a time. Yet were I appointed a second lieutenant to-morrow, my past service, for which as an enlisted man I now receive nothing, would give me over $30 per month more than another second lieutenant would receive. Is this just? No, it is not, except on the basis that "to those who have shall be given, and from those that have not shall be taken away."

Give us, we beseech you, law-makers and officers of this enlightened Government, a military and consequent social status in harmony with the work we perform and the services we are expected to render. If the hospital steward must be a man of brains and skill, *sans peur et sans reproche*, do not relegate him to the social regions of a coal-heaver, and compel his wife to spend her days in the physical and social atmosphere of the washtub. Give him both position and pay that in his yellowing years he may cease reproaching himself for having devoted his life to this profession, and that he may not exhaust the powers needed in the performance of his manifold duties, in devising ways and means to procure that which is justly due him. Certainly there are stewards now in the service whose mental status and accomplishments do not entitle them to aspire to anything higher than that which they now have, but these are gradually being weeded out, and the ranks of the hospital stewards of the army are being filled with the very best material furnished by the recruiting officer, and year by year more is expected of him by the medical officers and the Government.

Give these the rank and status of *warrant officers*, neither enlisted or commissioned. Then they may feel some pride in their calling, which it would require an elastic imagination to say that they do now.

ANOTHER HOSPITAL STEWARD.

Editor American Druggist:

DEAR SIR:—In answer to "A Subscriber" who ventilated himself in your October number, permit me to say that the average graduate of pharmacy would make but a very indifferent hospital steward, as the knowledge of pharmacy alone would be of very little assistance in helping a steward through the varied duties comprising a day's work.

No doubt "it has been some years since 'A Subscriber' has been connected with the army," and his "general observations" count for very little.

Paragraphs 6, 7, and 8 of his letter are conclusive proof that "A Subscriber" knows nothing about the subject which he undertakes to handle.

Merit and ability are the essentials for holding the position of hospital steward U. S. Army; those not meritorious and capable are quickly weeded out.

"A Subscriber" might obtain a few valuable points from the Surgeon-General's Office before venturing to discuss this subject again. H. H.

Editor American Druggist.

DEAR SIR:—In the October issue of your Journal, you allow a large space to correspondence from Hospital Stewards in the Army.

Your valuable aid, in common with other of the medical journals, has already been enlisted in our behalf.

To sum up: the efforts of years, and constant but not *concentrated* exertion to better the condition of army apothecaries has at least resulted in one thing, viz.: to plainly show that the service, as a whole, is injured by this "well-founded discontent." The administration of the Surgeon-General's office, the prevailing opinion in the army and among professional men in civil life is strongly in favor of a better condition of things for this class of medical subordinates, for the medical fraternity knows full well the responsibility army surgeons are compelled to throw on their stewards.

It is a waste of time to compare our services with any other branch. *Facts* are as plain as "Holy Writ;" let the truth alone prevail.

The first letter in your October issue in the main is an excellent one. It shows a gentlemanly intention to state matters as they *actually* are. The second, while remarkably well-written,

shows considerable egotism, and might be properly signed "Pharisee, We Thank God, etc." Now let me tell this pharmacist (?) that pharmaceutical ability alone will be far from making a successful steward. But if an advance in pay and a slight increase in rank were given army stewards, *competent druggists* from civil life would *seek* the *situation*, and after serving a while as second-class stewards, could be appointed to the position. There will be plenty of vacancies in the next four years; a great many of the older stewards will soon be eligible for the retired list; and with increased compensation will come increased abilities. As for the third letter in your October issue, signed "Caduceus," let him retire to a cave and pull it over him. If, in the face of the surgeon-general's recommendation and prevailing opinion, he is satisfied with $34 monthly, and to have his wife rub out her knuckles on a wash-board while he pursues the profession of a pharmacist (?), why, all right; but let us make a separate class for him alone. All honest work is honorable, but "comparisons," as he makes them, are very "odious." I think myself it is rather hard for a class of men supposed to possess the qualifications of army stewards, compelled to have their wives do washing in order to eke out a living. Let a bill be framed and energetically pushed advancing the position of army stewards to the grade and pay of a warrant officer in the navy, all under such rules as the surgeon-general may see fit to make. This will give no special advancement, but will give increased pay and a better general status, make examinations more stringent (practical ones, however, and not simply crams), and you will soon have a body of ambitious and efficient men, and you will no longer have your columns filled with just complaints. For the steward of the present, who all in one is sub-doctor, sub-dentist, sub-nurse, sub-cook, sub-clerk, in fact, sub-servant, and shall I add, sub-washerwoman, will be relegated to the past to keep company with a good many other "customs of the service," now happily no longer in vogue.

"BETTER DAY."

Editor American Druggist.

SIR:—If you will allow me the space in your valuable journal, I will reply to some of the hypercritical remarks of "A Subscriber" in your October number. He starts out with the assertion that he "has been subjected to the examination required of army apothecaries," and "is thoroughly acquainted with army life." Granted; yet we think it has been been some time since he severed his connection with the army, and while there have been well-directed efforts to increase the efficiency of the corps, he has remained *in statu quo*.

He is at least more than a year behind the times, for if he will refer to G. O. No. 98, A. G. O., Aug. 20th, 1884, he will find that the hospital steward's corps has been reduced in numbers from 150, as stated by him, to 140. We think he is still farther behind the times regarding the qualifications necessary to become a hospital steward, as he flippantly speaks of the appointment, saying: "Were all aspirants to this position made to pass the specified examination in materia medica, minor surgery, chemistry, prescription compounding" (by which we suppose he means pharmacy), "general aptitude for managing and conducting hospitals, English grammar, rhetoric, history, etc., as laid down by law, the hospital steward's corps would compose a fair class of druggists. But such examinations are in nearly every instance a mere matter of form, a farce."

Whoever heard of an examination in rhetoric and history to test a man's qualification as a pharmacist? His assertion regarding the examination being a mere form is without foundation, and reflects upon the surgeons of the U. S. A., who are in every instance the examiners.

Army regulations, par. 280, are sufficiently explicit regarding the qualifications of the men who are recommended for appointment. We have heard it asserted that some years ago it was much easier for a man to obtain the position than at the present time; that the examinations were not so rigid as now. We presume that was when "A Subscriber" belonged to the corps. As may be suppposed, the writer of this article is a hospital steward, and is not a Ph.G., and if you will excuse his bringing his own case forward, will use it as an illustration of what is necessary to qualify for the position of a hospital steward. Enlisted in 1881; profession, school-teacher; commenced the study of pharmacy, and took practical lessons in dispensary work during leisure time in December, 1882. Was ordered to a large hospital as an assistant to the hospital steward in June, 1883. Prosecuted the study of materia medica, chemistry, minor surgery, and bandaging under the tuition of an assistant surgeon, U. S. A., having regular recitations three times per week, and practical pharmacy, together with instruction as to hospital papers under tuition of the hospital steward until January, 1884, when I presented myself for examination.

The examination was conducted by a major and surgeon U. S. A., consisting of the foregoing, and English grammar, but excluding history and rhetoric; it was partly oral and partly written, and the papers containing the written questions and answers were forwarded through the medical director of the department to the Surgeon-General, U. S. A. This is the rule followed out in every instance that I know of personally.

We know of two young men who left positions as registered pharmacists, enlisted in the army for the purpose of becoming hospital stewards. One attempted to pass the required examination, and was recommended to put in six months' study by the examiner; he did so, and at the end of that time passed a satisfactory examination, and was recommended for the position to which he was afteward appointed. He has since studied medicine, and is now attending lectures. The other has passed the examination, but must await his turn for appointment, in the mean time doing duty as a soldier.

We have been approached by more than one young man who was a competent druggist, asking what steps were necessary to secure the position, but as the law at present stands a man must enlist as a general-service recruit and be put to duty as a private soldier, making his application for examination. If found competent, his name is placed on file in the office of the Surgeon-General for consideration, when his turn is reached. Here let me add parenthetically, that your correspondent waited from January, 1884, until July, 1885, for his appointment, but in the mean time doing all the duties of an hospital steward for the sum of $22.00 per month.

We think this shows conclusively that it is not such an easy matter for even a *competent* man to become a steward, and under the present administration of affairs, an *incompetent* one has no chance at all.

We receive the lowest of any of the N. C. staff, while our duties are more arduous. Rank is a secondary consideration with the most of us; what we ask is pay commensurate with our work. If we do not get this, and see opportunities of bettering our condition in civil life, we one by one step down and out, leaving a vacancy for some one else; and the only reason there are so many changes in the corps is because the stewards do not receive as much remuneration, counting their allowances, as they can make in civil life for the same work.

F. C.

Wyoming Pharmacy Law.

Ed. Am. Druggist:

I inclose a copy of the Wyoming statute regarding pharmacists. I have noticed several lists of States and territories published having such laws, omitting Wyoming, thus conveying the impression that we have no law, and thus inadvertently inviting incompetents to locate with us.

Respectfully,

J. H. FINFROCK.

LARAMIE CITY, Wyo., Oct. 25th, 1885.

CHAPTER 77.—PHARMACISTS.

AN ACT Concerning Pharmacists and Regulating the sale of Poisons, Repealing "An Act Regulating sale of poisons in the Territory Wyoming."

Be it enacted by the Council and House of Representatives of the Territory of Wyoming:

SECTION 1. That it shall be the duty of all practising pharmacists, druggists, or apothecaries now resident, or who may after the passage of this act become residents of this Territory, to deposit with the Recorder of Deeds within the county wherein the said pharmacist, druggist, or apothecary resides and practises his profession his diploma or a certified copy of it for record.

SEC. 2. It shall not be lawful, after the passage of this act, for any person other than a registered pharmacist to retail compound, or dispense medicine and poisons, or to open or conduct any pharmacy or store for that purpose unless such person shall be, or shall employ and place in charge of said pharmacy or store a registered pharmacist within the meaning of this act.

SEC. 3. Any person in order to be a registered pharmacist, druggist, or apothecary, shall be a graduate of some *bona fide* school of pharmacy, regularly chartered by the State in which it is located or shall at the passage of this act have had three years' practical experience in drug stores where the prescriptions of medical practitioners are compounded.

SEC. 4. Pharmacists claiming the right of registration under this act, on account of practical experience, shall within ninety days after its passage show to the satisfaction of the Register of Deeds that they have had three years' practical experience in the preparation of prescriptions and in compounding and vending medicines and poisons, *provided* that nothing in this act shall apply to any person or persons in business on their own account upon the passage of this act.

SEC. 5. All druggists shall be held responsible for the quality of such drugs, medicines, and chemicals as they may sell or dispense, except such as are sold in the original packages of the manufacturers, and patent medicines, and any adulteration of the same shall be considered a misdemeanor, the penalty of which shall be a fine of not less than fifty dollars nor more than two hundred dollars.

SEC. 6. It shall be unlawful for any pharmacist, druggist, or apothecary to sell, barter, or give away any poisons without distinctly labelling the bottle, box, or package, in which it is contained with the name of the article, the word "poison" and a vignette representing a skull and cross-bones, and the name and place of business of the seller. The purchaser must be made aware of the poisonous nature of the article, and shall represent that it is to be used for a legitimate purpose. The seller shall also enter in a book kept for that purpose the date of sale, name of purchaser, name and quality

of the poison, and for what purpose it was purchased.

SEC. 7. The provision shall not apply to the dispensing of poisons in usual doses, nor to physicians' prescriptions.

SEC. 8. Any person or persons violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction shall be fined twenty-five dollars for each offence.

SEC. 9. All acts relating to the sale of poisons are hereby repealed.

SEC. 10. This act shall take effect and be in force from and after its passage.

Approved March 10th, 1882.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,608.—**Elixoid and Valoid** (Canada).

These are new terms, originated in England, to denote elixirs and fluid extracts. A *valoid* is a liquid or fluid extract, each pound of which represents one pound of the crude drugs. It would seem that the term *elixir* was thought to be misleading, or possibly productive of prejudice. At all events, technical language has been enriched by two new glossological abortions.

No. 1,609.—**Paper Bottles.**

We have had several inquiries relative to the possibility of obtaining paper bottles in this country, similar to those mentioned in European journals. We have just seen a statement in *The American Stationer* that Mr. L. H. Thomas, maker of ink, at 59 Michigan Avenue, Chicago, has commenced the manufacture of these bottles. They are about two-thirds as heavy as glass, and can hardly be broken by usual accidents.

No. 1,610.—**Black Coating for Nickel** (R. C.).

We are informed that this may be produced in the same manner as it is done on brass. Dissolve copper in nitric acid to saturation; immerse the articles in it, and then heat them moderately over a charcoal fire, turning them constantly. This must be repeated several times, until the tint is dark enough. Finally, the objects are polished with olive oil.

We have no experience with this ourselves and would suggest that you try the method on some inexpensive object, before risking some costly apparatus. We would also be thankful for information as to the success.

No. 1,611.—**White Paint for Metal** (C. S.).

We are asked to suggest a white paint or white cement, which will not soften in contact with diluted alcohol or turn dark when immersed in alcohol and exposed to sunlight.

This is a problem which is difficult of solution. All ordinary paints are more or less soluble in alcohol. We might venture to suggest that you try zinc white in a solution of india rubber in benzol.

No. 1,612—**Cod-Liver Oil Emulsion** (Subscriber).

This correspondent says: "Please let me know through your paper a good method for preparing an emulsion with cod-liver oil that will remain unchanged for a reasonable length of time. I have experimented with powdered acacia, alkalies, and pepsin, but without good permanent results."

We advise the writer of the above to try the formula outlined in an adjoining answer. If the emulsion is *well made*, it will keep for a long time, but it should not be exposed to the air, nor put into a warm place.

The old-fashioned acacia emulsion, if properly made, with correct proportions, and a little alcohol added, will likewise keep for a long time. Look back to page 64 of this volume (April No.); you will there find a very complete article on the making of emulsions.

No. 1,613.—**Alabaster Cement** (R. C.).

We would suggest that you try one of the following:

1. *Casein Cement.* To skim milk, from which all the fat or butter has been removed, add a little vinegar, remove the curd, and wash it with water until it no longer has an acid reaction. Then express the water as much as possible, and dissolve it to saturation in a cold concentrated solution of borax. This cement must be applied very thin, and the broken objects must be firmly kept together for several days, to allow the cement to set.

2. *Glue cement.* Soak 1 oz. of best white isinglass (or, for commonp urposes, glue) in cold water until it is soft. Then pour off and express the excess of water, and dissolve the isinglass in 4 oz. of strong acetic acid, with the aid of heat. Add 1 drachm of powdered boracic and 5 grains of benzoic acid. The bad odor which some kinds of gelatin or glue have, may be overcome by some flavoring agent.

3. Dissolve celluloid in ether until of syrupy consistence, and apply onthe fractured edges. Keep the fragments quietly in contact, until the ether evaporates.

No. 1,614.—**Cleaning New Rubber Corks and Tubing** (M.).

New rubber corks and tubing are always coated with more or less sulphur, and perhaps also some of the "filling" that is often added to them (which is often powdered soap-stone). Mere washing in water will not remove this coating, especially from the inside of tubing. It is best gotten rid of by boiling the goods in a solution of 1 part of sulphide of sodium and 2 parts of caustic soda in 10 parts of water. The tubing should be lifted out of the liquid occasionally, and carefully re-immersed, so that new liquid will pass throughout its bore. After having been thoroughly boiled in this manner, the goods are carefully washed in water. If the tubing is previously treated with warm water and thoroughly kneaded or beaten, so as to loosen the coating adhering to the inside, the above-described cleaning-process will be much more thorough.

No. 1,615.—**Preventing Rubber-Tubing from Getting Brittle** (M.).

Commercial rubber-tubing of the present time is by no means what it used to be. The sharp competition between manufacturers, and the small profit alleged to be made by the latter, are undoubtedly the chief cause. There is so much foreign material ("filling") now mixed with the rubber, that it either loses a great deal of its elasticity or, even if it possesses the latter, loses it quite rapidly. Even the best rubber-tubing is apt to get hard or brittle by age. Much more so the cheap and poor tubing usually sold by dealers. The only way in which this hardening can be avoided is to keep all rubber-tubing under water. It should be carefully washed after being used, and then coiled in a tub or vessel of clean water, which should not be allowed to become foul. This keeping under water will change the color of the tubing in the course of time, gray tubing becoming darker, and colored tubing generally paler. But the *quality* of the rubber will not deteriorate.

Some years ago, it was announced that a patent had been taken out on a process of preventing rubber-tubing from hardening and cracking (see NEW REM., 1883, 25). The process consists in steeping the tubing in melted paraffin, and subsequently drying it in a room, at the temperature of about 100°. We have no experience with this, and while we believe that paraffin will have some effect in preserving the tubing, we cannot understand why it needs to be "dried" after being steeped in paraffin.

When the hardening has not proceeded very far, tubing and other soft rubber goods sometimes be rendered serviceable again by steeping them in a mixture of 1 part of water of ammonia and 2 parts of water.

One precaution should always be observed in the use of soft rubber goods of all kinds, and that is protection from oil or grease. Rubber which has become greasy loses its elasticity; becomes brittle very rapidly, and it is almost impossible to restore it to its former state of usefulness.

No. 1,616.—**Emulsion of Cod-Liver Oil** (Ch. and J., England).

The popular cod-liver oil emulsion which you inquire about in your letter is not made with milk, nor does it contain any so far as we know, but it is made with Irish moss. In NEW REM., 1881, p. 194, we published a paper by Dr. A. B. Huested, of Albany, on emulsions, made by means of Irish (the title has "Iceland" by mistake) moss, and for details of the process we must refer you to this. In a condensed form, the process is as follows:

Take of dry Irish moss 4 drachms (240 grains), wash it thoroughly in two or three portions of cold water, put into a suitable dish, and pour upon it 32 fl. oz. of water. Apply heat, gradually increasing until the boiling point is reached, continue till the moss is nearly all dissolved and the whole amount reduced to about one-half. While still hot, pour upon a funnel-shaped wet flannel filter, and allow the mucilage to drain off, not using pressure or stirring, as this would force through small particles of the moss, and make it cloudy and dirty. To the strained product, which will amount to about 13 fl. oz., add 3 fl. oz. of glycerin. A decoction of Irish moss of this strength will readily make an emulsion of cod-liver oil of 50 per cent, and even more. The glycerin assists in preventing the separation of the emulsion when salts are to be added.

In making the emulsion of cod-liver oil, Dr. Huested found it best (which we can confirm by our own experience) to make it in a bottle holding about one-half more than the quantity desired to be made. Supposing two pints are to be prepared. First introduce the mucilage—15 fl. oz.—then the oil in five or six portions, altogether 16 fl. oz., shaking thoroughly between the additions, and until the mixture is white and creamy, without the appearance of streaks when the mixture is thrown up against the inner surface of the bottle, and allowed to run down. The emulsion amounts now to 31 fl. oz., and it may either be completed by adding more of the mucilage, or syrup, or water until the 32 fl. oz. are obtained, or, if any flavoring substances or any salts are required to be added, they may be dissolved in just enough water to make up to bulk. It has been found by experience that the addition of about 15 grains of common salt and about 1 or 2 oz. of alcohol to the pint of emulsion makes it still more stable.

For practical information on emulsions, made by the standard method from oil, gum, and water, see the paper by Prof. J. Lewis Diehl, in NEW REM., 1882, 138.

No. 1,617.—**Nerolin** (U. A.).

This is a new chemical, belonging to the same series to which artificial vanillin, cumarin, and the so-called heliotropin belong. Its exact chemical constitution has not yet been announced, so far as we know. It possesses a very strong odor so closely resembling that of orange flowers that it may be used in aqueous or alcoholic solution, as a substitute for oil of neroli, for making up the less expensive perfumes, and for scenting soaps. It is sold by Fritzsche Brothers, of 34 Barclay street, at $3.00 per ounce. It appears in form of soft, unctuous crystalline scales, soluble in water and alcohol.

No. 1,618.—**Fluid Extract of Wild Cherry** (W. E. W.).

The officinal fluid extract of wild cherry will mix, clear, with syrup, provided it was itself free from sediment. Though probably the best and most perfect formula made public up to 1882, yet it has been found that the product made by it frequently deposits a precipitate. In 1883, Mr. Alonzo Robbins published a formula which is said to be free from this objection. It is as follows:

Moisten 100 parts (or 25 av. oz.) of wild cherry, in No. 40 powder, with 50 parts (12 fl. oz.) of water, and set aside for 24 hours. Then mix 20 parts (5 av. oz.) of sugar with the moist powder, pack in a percolator, add a mixture of 1 vol. of alcohol and 5 vol. of water, and let macerate for 48 hours. Then percolate, adding more of the same menstruum, until the wild cherry is exhausted. Reserve the first 80 parts (19¼ fl. oz.) of the percolate, add to the remainder 10 parts (2½ av. oz.) of glycerin, and evaporate to a soft extract. Dissolve this in the reserved portion and add enough of the menstruum to make 100 parts (24 fl. oz.).

No. 1,619.—**Bronze Liquid or Liquic Bronze** (J. M. C.).

A bronze color may be produced on many metals by special processes, varying according to the nature of the metal and other circumstances. For instance, a copper medal may be bronzed, after being rendered chemically clean, by being immersed into a boiling solution made by boiling equal parts of verdigris and culoride of ammonium with some strong vinegar and a certain proportion of water. The coating produced on the copper is due to the formation of an oxide. Since the method of bronzing varies according to the metal, it will be impossible for us to give to our correspondent any other method but that in which bronze *powder* is mechanically applied. We do not advise the purchase of any liquid bronze, but recommend that the best commercial so-called gold bronze be procured. This should be mixed in a cup with some oil of turpentine and just enough *boiled* linseed oil to give it a little body, so that the bronze powder will not at once sink to the bottom. If applied by a brush, it will leave a shining metallic coat on drying. Any attempt to add varnish or similar substances will destroy all gloss in the dry coat.

If our correspondent's object is to put up a liquid bronze for the market, he may take enough hints from the above to accomplish his purpose. Most of the vehicles sold in fancy-goods stores for applying bronze, are composed largely of naphtha. If care is taken to keep this away from open flame, it will probably be the cheapest and best.

No. 1,620.—**Reaction for Arsenic** (Student).

The method of which you desire information is probably that recommended by O. Schlickum in the *Pharm. Zeit.* (1885, 465) for detecting arsenic in bismuth and antimony preparations, and in all other substances soluble in hydrochloric acid. It is as follows:

If a small crystal (about ¼ to ½ grain) of sulphide of sodium is dropped into a test-tube containing a solution of 5 to 7 grains of stannous chloride in 45 to 60 grains of hydrochloric acid, both sulphurous acid and hydrosulphuric acid are generated, the latter in consequence of the reducing action of the stannous chloride upon the sulphurous acid. If upon the surface of this solution there be carefully poured some hydrochloric acid containing arsenic, a yellow ring of sulphide of arsenic will immediately be formed at the point of contact of the two liquids, even if there is only $\frac{1}{1700}$ grain of arsenious acid present. This yellow ring gradually spreads upward. If as much as $\frac{1}{120}$ grain of arsenious acid be present, the whole upper layer will assume a yellow color in a few minutes. If arsenic acid is present, the reaction takes place more slowly.

No. 1,621.—**Indelible Ink** (R. C.).

From among the many formulæ recommended we select the following:

1. *Silver Ink.* Nitrate of silver 1 drachm, water 2 drachms, water of ammonia, sufficient to precipitate the oxide and to redissolve it again. Add a little carmine to make the writing or marks made with it visible.

2. *Aniline black.* Make two separate solutions; one containing 17 parts of chloride of copper, 21 parts of chlorate of sodium, and 11 parts of chloride of ammonium in 120 parts of water. The other consisting of 240 parts of hydrochlorate of aniline, 400 parts of water, and 120 parts of glycerin. For use, 1 volume of the first-mentioned solution is added to 4 volumes of the second. The writing is at first greenish, but finally becomes very black. If heat is applied, the black color appears more rapidly, but the fabric is apt to be injured by it.

3. *Indigo Ink.* Into a flask put 10 parts of very finely powdered indigo, 25 parts of pure sulphate of iron (ferrous), and 15 parts of dry caustic soda dissolved in 120 parts of distilled water. Close the flask immediately air-tight with a stopper. Shake it occasionally until the blue color has disappeared, then allow to settle. The supernatant liquid contains *indigo-white* in solution, which by exposure to air is changed to insoluble blue-indigo. Just before use, take 10 parts of the decanted liquid, mix it with 2 parts of mucilage, tint it with a little fuchsin or other aniline color (to make the writing visible) and write at once on the fabric. The blue color will come out under the influence of air and light.

No. 1,622.—**Shoe Polish** (G. F. H., Nashville, Tenn.).

"I have been for some time trying to get a practical working formula for liquid shoe dressing, and have tried every one published in the AMERICAN DRUGGIST. Last one in August number, page 157, consisting of glue, logwood, indigo, etc., which makes a *very good* polish, but spoils after keeping three or four weeks. I used Irish glue in one lot, and white in another, of the best procurable quality. Both lots seemed first to sour, and drop down a deposit seemingly of logwood. After the souring, it gelatinized, and became too offensive for use. Can you inform me what is the trouble? Or can you inform me what will keep the glue from spoiling that will not precipitate logwood or nigrosine? I have tried a great many formulas, and none prove or give satisfactory results. Any information will be highly appreciated."

The point which our correspondent wishes information on is one which can only be cleared up by experiment. It is very likely the most important feature of the whole formula, and no one is likely to expend upon it the time and money except he who wishes to put the formula to some practical use. We regret to say that all that we can do is to make suggestions. In the first place, you ought to try—since you appear to have a good formula now—whether you could not prevent the mixture or the glue from souring and spoiling by the addition of some preservatives. Among these we would suggest, in the first place, naphthol (which you may obtain in any quantity and at low price from the Albany Aniline and Chemical Works), or carbolic acid. Perhaps salicylic acid might answer to some extent. Again, perhaps some advantage may be gained by using vinegar or diluted acetic acid of more than ordinary strength. Or the bichromate may be increased in quantity. By the way, a part of the glue can probably be replaced by glucose. If bisulphide of carbon did not usually have such a disagreeable odor, we would recommend this as the very best preservative. It is *slightly* soluble in water, and probably also in the mixture referred to. If more is to be added, it may be dissolved in *polysolve* (AM. DRUGG., 1884, 22) when it will mix with aqueous liquids.

Will the correspondent who sent us Query 1,588 in our October number have the kindness to communicate with Mr. O. T. Jester, No. 721 Green st., Philadelphia.

Care of Stove-pipes.

THE *Scientific American* offers some suggestions that may prove serviceable for those who are getting their stoves in order for the coming winter, and find their stove-pipes rusted and unsightly. Dip rusted pipe in one part of sulphuric acid and ten of water, and then into a bath of hot lime-water. Finally rub with dry saw-dust.

To give it a polish apply the following mixture:

Asphaltum	2 pounds.
Boiled Linseed Oil	1 pint.
Oil of Turpentine	2 quarts.

Melt the asphaltum in an iron pot, boil the linseed oil and add while hot. Stir well and remove from the fire. When partially cooled, add the turpentine. [This operation had best be undertaken out of doors where there is less risk of fire.]

The Mindererus Bottle,

if of flint glass, acquires a dimness for which there is no remedy, resulting from the action of the contents upon the lead silicate of the glass. Ammonium-acetate solution is one of the best solvents for "insoluble" lead salts; for which reason the new British Pharmacopœia directs that liquor ammonii acetatis should not be kept in flint-glass bottles.—*Chemist and Druggist.*

Chilblain Crayons.

Camphor	3 parts.
Iodine	6 "
Olive Oil	96 "
Paraffin	37 "
Alcohol	q. s.

Dissolve the camphor in the oil, and the iodine in as small a quantity of alcohol as possible. Add the mixed liquids to the melted paraffin and pour the whole in suitable moulds. The pencil can be rendered hard or soft by the addition or diminution of olive oil.—*Journ. de Méd. de Paris.*

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EDITORIAL.

THE paper by Professor Oldberg on page 222, is unquestionably the most important contribution to the literature of the metric system that has appeared for a long time in this country. The facts referred to, the position held by the writer and his reputation as the most earnest advocate, heretofore, for the introduction of this system of weights and measures into practical pharmacy, cannot fail to put a stop, for some time at least, to any further increase in the employment of this system outside of laboratory work.

We venture to predict, also, that Prof. Oldberg makes so good an argument for the relative perfection of the system now generally in use in the United States, that no one will take the trouble to modify it even so slightly as he suggests, to make it conform in any way to metric standards. The general opinion will be that the variation would, for all general purposes, be so slight that it will be better to let well enough alone than to run the risk of confusion.

When this journal was changed from a quarterly to a monthly issue in January, 1876, we announced our intention to express quantities, as far as practicable, in the terms of the metric system, and we have since, on numerous occasions, published extended tables and comments which were calculated to aid the comparison of one system of measurement with the other. After ten years of hopeful effort toward the introduction of the metric system we fail to appreciate any decided increase of feeling in its favor among our readers, and it becomes a question of some importance whether, for most purposes, the end will justify the trouble, or, to use an old saying, "whether the game is worth the candle." Within the ten years past, "Metric Bureaus" have been established and gone out of existence. Societies have resolved to adopt the metric system and still continue to use the one left to us by our fathers; hundreds of papers and discussions have been published, and a few physicians have taken the trouble to learn the posology of their remedies so that they could use the metric system with some facility. Not one medical school in the country has taught the metric doses of medicine in a manner to render students as familiar with them as they are with the ones generally used; and on the other hand, the liability to mistakes resulting from the use of the system when the prescriber and dispenser were not equally familiar with the metric notation, has had several lamentable illustrations.

As an example of the practical working of many efforts to render the metric system popular among physicians, we will mention the experience of the largest County Medical Society in the United States. Largely through the influence of one of its members, a committee of three was appointed to report upon the subject, and in time the result of its labor appeared at length and in various forms. An investigation of the *personel* of the committee showed that its prime mover and chairman was not actively engaged in practice, and rarely had occasion to write a prescription. Another member, upon being questioned with regard to his own practice in using the system, said he did use it occasionally, but not often; and the third, while advocating its use by others, *never* used it himself.

We shall feel reasonably sure that the great majority of our readers will not be grieved if, in the future, we express quantities in grains, drachms, and ounces, and we shall not consider it desirable to devote much space to advocating the system proposed by Prof. Oldberg, until the sentiment in favor of a drachm of sixty-two grains, etc., has become pretty general.

THE communications published in this and preceding numbers relative to the military status of the Hospital Stewards of the U. S. Army should convince our readers of the justness of the claims of this worthy and honorable branch of the pharmaceutical profession, and stimulate an united effort in their behalf. We are aware, from personal knowledge, of the laborious and responsible duties connected with this branch of the service, and believe that it is mainly owing to the difficulty of securing united action on the part of persons residing so far apart, that some increase of pay and rank has not already been secured for them.

THE Committee on Unofficinal Formulas, appointed by the American Pharmaceutical Association, at its last meeting, desire the co-operation of all the pharmaceutical organizations in the United States and Canada. A circular has been prepared, explaining the nature of the proposed work, which will be forwarded on application addressed to the committee at the College of Pharmacy, 209 and 211 East Twenty-third street, New York.

Our readers who desire a scientific periodical devoted to topics outside the course of their regular business, are recommended to try *The Kansas City Review*, edited by Theo. S. Case, M.D., and Mr. Warren Watson, and published in Kansas City, Mo. This magazine has already entered upon its ninth volume, and is a thoroughly progressive and readable publication. We have had the pleasure of receiving it since its commencement and appreciate it highly.

IT is stated by the daily papers that the anti-vaccination crank, who has stirred up most of the resistance to vaccination in Chicago and Montreal, on being arrested, was found to have been vaccinated three times, the last time within a few weeks.—*Boston Med. and Surg. Jour.*

AN exchange notes the result of an attempt on the part of the Pharmaceutical Council of Ireland to found a national college of pharmacy on the basis of a limited liability company. The response to an appeal addressed to all pharmaceutical chemists and apothecaries keeping open shop in Ireland was a definitely promised capital of £5!

Morphine Habit in France.—Quoting, in the *Union Pharmaceutique*, Mr. Madsen's assertion, made at the Brussels Congress, that the habit of morphia injection is seriously extending in Denmark, and that the alkaloid is imported by patients direct from Germany and England, M. Genevoix, Director of the Pharmacie Centrale, says the case is as bad or worse in France. Dealers in ladies' goods, having obtained admission into the saloons of the ladies to be tempted, offer them solutions of morphia as well as laces and muslins. The police are on the look-out for these vixens, and have already arrested a few. There is a touch of M. Zola in this narrative.—*Chemist and Druggist.*

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GRUNDLAGEN DER PHARMAKOGNOSIE. Einleitung in das Studium der Rohstoffe. Von F. A. FLUECKIGER und A. TSCHIRSCH. 2. Aufl. 186 illust. 8vo. Berlin: Springer, 1885. 8 marks.

MANY of the readers of this paper will have had occasion to peruse or to profit by the first edition of this well-known work, by the pen of Prof. Flückiger alone. It contributed much toward awakening a wider interest in this subject, even outside of the country where it was issued, and we always regretted the circumstance that it was not translated into English, particularly as there is absolutely no work in the English language which covers the ground. The new edition, in which Prof. A. Tschirsch is associated with Prof. Flückiger, lies before us. It is an entirely new book, embodying every essential fact established by the investigations up to the present time regarding the morphology, and more particularly the anatomy of the cell, its contents and walls, and the various vegetable tissues and structures which are found in plants. At every step, special attention is bestowed upon the best methods of recognizing and diagnosticating the various organs or structures under the microscope, though the authors have wisely omitted special chapters on the construction and use of this instrument, since numerous special works on the microscope are available. The number of illustrations has been correspondingly increased, and the numerous references to standard works or monographs enable the student to pursue his researches into more minute details. In the presentation of such subjects as chlorophyl, gum and mucilage, and others, in which there is still much speculation, a judicious selection has been made of the better established facts or views. We should have stated in the beginning, that the larger portion of this edition (morphology and anatomy) has been re-written by Prof. Tschirsch, who has also added 37 new illustrations. The first part, treating of the general principles and the methods of presenting the subject of pharmacognosy is by Prof. Flückiger.

The peculiar nature of the subject treated, and the many modern technical expressions (some of them of quite recent date) which occur in it, make the task of translation rather difficult. It is to be hoped, however, that an English translation will soon be elaborated by a competent person.

A MANUAL OF WEIGHTS, MEASURES, AND SPECIFIC GRAVITY, including Principles of Metrology; the Weights and Measures now in use; Weight and Volume and their reciprocal Relations; Weighing and Measuring; Balances (Scales) and Weights; Measures of Capacity; Specific Weight and Specific Volume, and their Determination and Practical Applications, with Rules and Tables, By OSCAR OLDBERG, Pharm.D., Professor of Pharmacy and Director of the Pharm. Lab. of the Chicago College of Pharm. Chicago, 1885 (Publ. by the Author), pp. vi, 248. 8vo.

THE title of this work gives a general idea of its contents, though, on examination, it will be found to contain much fuller information than might be expected from the title alone. In glancing over the preface, we are at once struck by the unexpected announcement that the author has abandoned his support of the metric system and his proposition to substitute an entirely new standard of weights and measures. [See his paper on this subject on page 222 of this number.]

Prof. Oldberg has evidently devoted much study to the subject of weights and measures, and it will interest every thoughtful reader to follow his plan and arguments for new systems, differing but little from those now in use, which would be perfectly commensurate with the metric system. It is very doubtful, however, whether the time is ripe for introducing another system, no matter how good it may be.

The book covers the ground so well and thoroughly that we need not extend our remarks, but would recommend its careful perusal and study by every pharmacist and student of pharmacy. The following corrections are to be noted:

P. 10, in heading of table, read grammes for grains. P. 61, line 2, read liter for meter; p. 161, the figures of lines 7 to 10 from below should all be moved up one line).

THE PHYSICIAN'S VISITING LIST (Lindsay & Blakiston's) for 1886. Philadelphia. P. Blakiston, Son & Co.

THE thirty-fifth yearly edition of this necessary pocket account-book is at hand, and contains, as usual, much practical information, in addition to the record blanks.

A COMPLETE PRONOUNCING MEDICAL DICTIONARY: Embracing the Terminology of Medicine and the Kindred Sciences, with their Signification, Etymology, and Pronunciation, with an Appendix, etc., etc. By JOSEPH THOMAS, M.D., LL.D., etc. On the basis of Thomas' Comprehensive Pronouncing Medical Dictionary. Philadelphia: J. B. Lippincott & Co. 1886, pp. 844, roy. 8vo.

ALTHOUGH in many respects a very good work of its kind, it is by no means complete, as its title would lead one to infer. Special prominence is given to pronunciation and derivation of words, and in these particulars it is especially valuable. The appendix contains much valuable matter relative to Latin terms, phrases, etc.; writing prescriptions, doses of medicines in common use, chemical symbols, orders and families of living mammalia, and weights and measures. The book is well adapted for the use of students.

FOURTH ANNUAL REPORT OF THE ILLINOIS BOARD OF PHARMACY, with Abstract of State Pharmacy Register. 1885, pp. 200, 8vo.

THIS contains, besides the official report, the published minutes of the Board, abstracts of the cases prosecuted by it, the State Pharmacy Law, and lists of the pharmacists registered throughout the State arranged according to location and alphabetically. Another valuable feature is the list of towns, with their respective populations. A summary gives 3,110 registered pharmacists, and 670 registered assistant pharmacists, of which 646 and 143 respectively are in Chicago. Only 87 out of 210 applicants for registration during the preceding year were successful.

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A. R. Tatem & Co., Salem, Ohio, manufacturers of cut and gummed labels, and jobbers of pill and powder boxes, have favored us with a copy of their elaborate catalogue of labels, prescription blanks, etc., which evince good taste and extensive facilities for doing this class of printing.

THE PHYSICIAN'S POCKET DAY-BOOK. Designed by C. HENRI LEONARD, M.A., M.D., etc.

THIS book is 3½x7½ inches in size; will serve for 25 or 50 families weekly for 13 months, and is provided with blanks for recording 94 obstetrical cases and cash accounts. It is provided with a pocket and flap; is bound in red leather, and is a very ingenious and serviceable pocket memorandum.

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